# TEXTILE TECHNOLOGY DIGEST

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## Abstracts

### ORGANIC FIBERS I

SURVEY OF GERMAN COTTON, RAYON, AND SILK INDUSTRIES. British Intelligence Objectives Subcommittee Report No. 574; price 14s 10d.

Listed in Classified List No. 2 of Industrialists' Reports on Germany (Oct. 1946). TTD: 6-47

### Vegetable fibers I 1

**Cotton in Punjab.** Research on cotton in Punjab. Mohammad Afzal, Cotton Research Laboratory (Lyallpur). *Indian Textile J. 57,* 255-7 (Dec. 1946).

The development of improved varieties of *desi* cotton is briefly reviewed, with comparative figures on yield and certain characteristics of new strains being presented in 4 tables. TTD: 6-47

**Drying seed cotton.** Better drying of seed cotton will raise grade of lint. L. W. Faulkner. *Cotton Trade J. 27,* No. 9, 8, No. 10, 7 (Mar. 1, 8, 1947).

Seed cotton should be dried at a temperature which will not cause damage but will dry the fiber to 5% moisture to give the best cleaning results. Raw cotton which has been dried to facilitate cleaning should be humidified to about 8% moisture by bringing the lint into contact with moist air in the gin. TTD: 6-47

**Flax.** Quality factors in flax production. S. A. G. Caldwell. *Fibres 7,* 356-9 (Dec. 1946).

The structure of the flax straw is described and methods used for retting are compared. TTD: 6-47

**Hemp sacking.** Sacking from South African weeds. Anon. *Jute & Canvas Rev. 18,* No. 223, 5 (Apr. 1947).

Deccan hemp is now being used as a raw material for sacking. It can be grown almost anywhere and has been a troublesome weed. It is said to be slightly superior to jute. Sunn hemp is a legume which is grown to fix N in the soil. The plant can be cut and sold for fiber with a loss of only 10% of the fertilizer value. New Zealand hemp (*phorium tenax*) is a perennial which can be used to make binder twine and marine ropes in addition to bags. TTD: 6-47



**Introduction to textiles.** Introduction to textiles for students, consumers, retailers, and wholesalers. W. G. Byerley. *Textile J. Australia 21,* 748-9, 764, 770-1 (Jan. 1947).

A general exposition of the cotton fiber from the time it matures until it is spun into yarn is presented along with an explanation of the properties of the fiber, such as length, fineness, luster, handle, etc., and of the effects these properties have on spinning yarns of different counts. A general discussion of the flax fiber is also presented and includes a description of the processes through which this bast fiber is put prior to the manufacture of linen fabrics. The relation between the quality of the fiber and purpose for which it is to be used is discussed briefly.

ELW TTD: 6-47

**Jute mill.** Modernizing jute mill equipment. S. A. G. Caldwell. *Jute & Canvas Rev. 18,* No. 223, 7-8 (Apr. 1947).

With modern equipment, output per operator hour has been increased 200-300%. A combined softening and spreading machine has been substituted for the ordinary horizontal softener and breaker card. New methods of sliver packaging have been developed. The high speed drawing frame is an outstanding development. It gives perfect control, and controlled draft spinning eliminates the roving process. The sliver from the finishing drawing frame is used to feed the spinning frame. Longer spinning drafts can be used and a more level yarn can be produced. TTD: 6-47

**Mechanically harvested cotton.** Spinning qualities found in mechanically harvested cotton. Wm. J. Martin, USDA Production and Marketing Administration. *Cotton 110,* No. 12, 73-5 (Dec. 1946).

In a brief survey it is noted that the first patent on a mechanical picker was issued around 1850. Of the hundreds of harvesters patented since, there are 5 general classifications to be distinguished: (1) the spindle picker, (2) the pneumatic, (3) the thresher, (4) the electrical, and (5) the stripper. From ginning tests and quality analyses made in 1936 differences of 3-4 grades have been found in favor of hand picking. Mechanization is

considered likely to be a factor in reducing the number of varieties of cotton planted in a given area.
JAW TTD: 6-47

**Ramie.** Research in Florida's ramie industry. Anon. *Cord Age Mag. 47,* No. 4, 22 (Apr. 1947).

Better information on the harvesting, decortication and fiber processing methods for ramie is to be obtained through a research project of OTS under contract with the Florida Board of Control. Development of a small portable decorticator is planned. Use of ramie leaf tops and wastes as feed and fertilizers will be investigated. By-products such as tannic acid, gum, and pectin are also possible. Some textile companies have developed experimental fabrics made of ramie or ramie mixed with silk, cotton, wool, linen and rayon. However, less than 2000 acres of ramie are now grown in the U. S. and the possibilities of the fiber as a domestic product are still in the experimental stage. TTD: 6-47

**Ramie.** Field culture of ramie in Florida. J. M. Dempsey, Newport Industries, Inc. *Cord Age Mag. 47,* No. 5, 18, 20; No. 6, 26, 29 (May, June, 1947).

The peat soils of the Everglades have been found to be ideal for ramie, due to the high organic content and physical makeup. Climatic conditions were found suitable. However, proper water control was found to be a most important requirement. Due to the uneven distribution of rainfall in the Everglades, ramie should be planted only when there is adequate soil moisture and preferably during the growing season from May through August. There are a number of forms and races of ramie, and 22 of these have been tested. Some have excellent characteristics. Ramie is now passing from the experimental to the commercial stage, but there remains much to be learned. Investigation of water requirements, planting and cultivation, pest control, variety selection, and breeding is needed. There is also need for mechanical research, including harvesting, decortication and fiber studies. TTD: 6-47

**Ramie.** Ramie—is it the fabric of tomorrow? Brittain B. Robinson, USDA. *Fibre & Fabric 100,* No. 3235, 6-7 (Feb. 1, 1947). Reprinted from *Daily News Record.*

A brief general survey notes introduction of ramie into U. S. in 1855 and points out that despite the fact it can be grown in certain areas, particularly Florida, there is no established market for it. TTD: 6-47

**Sisal.** Sisal production in East Africa. Eric Rigby-Jones. *Cord Age Mag. 47,* No. 3, 18, 28, No. 4, 26, 28, No. 5, 22, 34, No. 6, 22, 24 (Mar.-June, 1947); *Fibres 8,* 41-3, 79-81, 125-6, 164-5 (Feb.-May, 1947).





The effects of soil, altitude, and climate on sisal production in East Africa are reviewed. The problems of manpower, decortication and grading are considered. Details regarding the advantages of machine and sun drying are discussed. The dried sisal is brushed to straighten the fibers and to impart a sheen. The grading, inspection, and baling of sisal are described. It is concluded that quality should be improved. TTD: 6-47

COMPETITIVE POSITION OF COTTON BY MAJOR END USE MARKETS. Anon. Project 4 of short term fact-finding study on postwar agricultural and economic problems of the cotton belt; 1947; 167 pp. TTD: 6-47

GERMAN JUTE INDUSTRY. British Intelligence Objectives Subcommittee Report No. 624 (Subsequent to BIOS Final Report No. 198); price 1s 7d.

Listed in Classified List No. 2 of Industrialists' Reports on Germany (Oct. 1946). TTD: 6-47

PERIODIC PARTIAL FAILURES OF AMERICAN COTTONS IN BOMBAY AND PUNJAB. R. H. Dastur. Indian Central Cotton Committee Scientific Monograph No. 2; 1944; 152 pp.; price Rs. 5-8-0.

Reviewed in *J. Sci. Ind. Research (India) 6,* 33-4 (Jan. 1947). TTD: 6-47

## Animal fibers I 2

**Felting.** Felting of animal fibers. J. Menkart & J. B. Speakman, Leeds Univ. *Nature 159,* 640 (May 10, 1947).

A brief note on an investigation of the felting action of wool or fur and particularly of the carroting process. From present results carroting is probably best carried out by hardening the whole fiber with cross-linking agents and then softening the tip with reagents which cause disulfide-bond breakdown (of which mercuric acetate is considered the most effective). TTD: 6-47

**Indian silk worms.** Rearing silk worms in southern and eastern India. V. M. Appadhorai Mudaliar, Mysore Service Sericulture. *Indian Textile J. 57,* 153-7 (Nov. 1946).

A brief survey gives practical suggestion for maintaining vigor among hybrid races. TTD: 6-47

**Keratin structure.** Structure of keratin molecule. J. B. Speakman, Leeds Univ. *Nature 159,* 338 (Mar. 8, 1947).

Determinations of the rate of extension of wool fibers under constant stress provide a simple means of studying the structure and reactivity of alpha-keratin. TTD: 6-47

**Silk.** Silk. C. C. Ghosh. *J. Sci. Ind. Research (India) 5,* 172-82, 236-44 (Oct., Nov. 1946).

Sericulture in India is reviewed. Of 4 kinds of silk produced in India mulberry is the most important, the others being *eri* (by worms feeding on castor leaves), *muga* (by worms feeding on leaves of *sum*), and *tasar* (by worms feeding on leaves of *asan*). TTD: 6-47

**Wool blending.** Blending and teazing of wool stock. A. Ellis. *Textile Mfr. 72,* 575 (Nov. 1946).

An automatic ram that presses stock into bales after passing through the blending and teazing processes is briefly described and the operation illustrated by a diagram. TTD: 6-47

## Artificial fibers I 3

**Peanut protein fiber.** Peanut protein fiber: its position in protein fiber world. Walter M. Scott. Southern Regional Research Laboratory. *Chemurgic Digest 6,* 192-5 (June 30, 1947).

The past history, present status, future probabilities, properties and production problems are discussed in a brief survey.
LCL TTD: 6-47

**Rayon conditioning.** Conditioning of Bemberg rayon. A. R. Knight, British Bemberg, Ltd. *Textile Mfr. 72,* 598-600 (Nov. 1946).

Artificially controlled and natural uncontrolled conditions, and the effect of atmospheric conditions on rayon yarn, are discussed, particularly with reference to the cost of obtaining ideal conditions. Some of the compromises usually necessary are briefly considered.
TTD: 6-47

**Rayon saponification.** Some aspects of saponification of acetate rayon. Anon. *Am. Dyestuff Reptr. 36,* 64-9 (Feb. 10, 1947).

Factors affecting the rate of saponification of cellulose acetate rayon were studied. Two types of saponification, surface or superficial and diffuse, may be obtained with all possible gradations between them. In general, it has been shown that the saponification reaction can be controlled to give the desired results with a minimum of cost and effort provided proper care is taken in selecting the saponifying agent and the conditions for the reaction.
ELW TTD: 6-47

**Viscose rayon drying.** Alex A. McCormack (to Industrial Rayon Corp.). USP 2 418 653, Apr. 8, 1947.

Reels of the cantilever type are used for drying viscose rayon because they leave one end unobstructed. The heating fluid is admitted and exhausted at the supporting end. A simple and effective means for preventing loss of heating fluid is provided, which takes advantage of the pressure of the heating fluid to produce an efficient seal.
TTD: 6-47



**Rayon package cover.** Adrian J. L. Moritz (to Am. Enka Corp.). USP 2 418 657, Apr. 8, 1947.

A method is provided for applying protective sleeves to rayon cakes which eliminates manual manipulation and displacement or injury of the thread. TTD: 6-47

**Desulfurizing viscose.** Marion T. O'Shaughnessy, Jr. (to E. I. du Pont de Nemours & Co.). USP 2 418 660, Apr. 8, 1947.

Viscose in the gelled state is desulfurized with $Na_2S$ in the usual manner, washed with hot water and then treated with dilute mineral acid, preferably 0.2% $H_2SO_4$, again washed with hot water and put through the usual operations of bleaching, washing with water, and plasticizing or softening. The film so prepared contained less than 0.007% of carbon disulfide sulfur and less than 0.003% of inorganic nonsulfate sulfur, the total amount of sulfide sulfur being less than 0.01%; and the material is substantially free from objectionable color or odor arising from sulfur compounds.
TTD: 6-47

**Rayon spinning box.** Leslie C. Goodwin & Chas. Tinsley (to Harben's, Ltd.). USP 2 418 705, Apr. 8, 1947.

An improved arrangement of the drive from the usual self-contained motor unit to the spinning box is described which obviates the projection of air currents on to the spinning box which cause crystallization in the yarn in the box and on the exterior of the box of the spinning bath liquor. TTD: 6-47

**Dissolving cellulose.** Sidney M. Edelstein. USP 2 419 341, Apr. 22, 1947.

Cellulose fibers shorter than 200 microns were found to dissolve in an alkali metal hydroxide and zincate solutions over a wider range of conditions than otherwise, and the resulting solutions are free from objectionable quick gelling which takes place when longer fibers are used. Reducing the viscosity of the cellulose also increases the rate of solution. Solutions formed by means of this process give strong regenerated cellulose at a favorable cost. TTD: 6-47

**Esterifying cellulose fibers.** Andreas Ruperti (to Soc. of Chemical Industry in Basle). USP 2 420 499, May 13, 1947.

Regenerated cellulose may be esterified in a short time with small amounts of reagents by incorporating a

catalyst, impregnated with an acid anhydride, and exposing to a current of hot gases saturated with the esterification reagent at about 100°C. The time required is less than 10 min. The esterification is extensive and surprisingly regular. TTD: 6-47

**Carboxyalkyl cellulose ethers.** Onslow B. Hager & Louis H. Bock (to Rohm & Haas Co.). USP 2 420 949, May 20, 1947.

Shaped cellulosic products in the form of filaments, ribbons, and unsupported films which have good wet strength, which are insoluble in water, in solutions of alkalis, and in solutions of acids, which consist of carboxyalkyl cellulose ether, the free acid form of which is soluble in excess alkali solution and which contains Zr attached to carboxyalkyl groups of a cellulose ether in the amounts of 3-9% of $ZrO_2$, are formed by extruding a solution of the alkali-soluble carboxyalkyl cellulose ethers from an orifice into an acidic bath which contains a zirconium salt in solution. TTD: 6-47

**Protein fiber treatment.** Robin H. K. Thomson (to Imperial Chemical Industries, Ltd.). USP 2 421 302, May 27, 1947.

Filaments of washed, formaldehyde-hardened, artificial, coagulated protein containing associated water are desiccated and are then heat-treated at 85-120°C for a period of time insufficient to injure them. They are then rehumidified. TTD: 6-47

**Artificial tapered filaments.** E. I. du Pont de Nemours & Co. Brit. P. 578 238. *Textile Mfr. 72,* 608 (Nov. 1946).

Artificial tapered filaments are produced by extruding the filament at a constant volume rate through a spinneret from apparatus comprising a melting grid and a screw pump from which the molten polymer is delivered to the spinneret. TTD: 6-47

**Protein fibers.** Coöperatieve Condensfabrik. Brit. P. 578 367. *Textile Mfr. 72,* 608-9 (Nov. 1946).

Filaments are extruded from a coagulating bath of an alkaline protein solution and then hardened by means of agents reacting with amino groups, particularly formaldehyde, the product being then treated with 1 or more formate solutions of polyvalent metals with or without formates of univalent metals or salts. TTD: 6-47

## Synthetic fibers I 4

**Nylon.** Viscosity control of fibers. Anon. *Fibres 7,* 352-5 (Dec. 1946).

The molecular structure of nylon is discussed and a method of determining viscosities is described which is used in controlling the polymerization of the dicarboxylic acid and the diamine used in the preparation of nylon. TTD: 6-47

**Nylon manufacture.** Farm wastes to be used in manufacture of nylon. Oliver W. Cass, E. I. du Pont de Nemours & Co. *Chemurgic Digest 6,* 97, 99-101 (Mar. 31, 1947).

Various farm wastes yield furfural, which can be converted to hexamethylene diamine and thence to nylon. LCL TTD: 6-47

**Polyester fiber.** Terylene, new synthetic textile fiber. K. Turner. *Textile Recorder 64,* No. 765, 36-7 (Dec. 1946); *Textile Colorist 69,* No. 1, 22-3, 46 (Jan. 1947).

Terephthalic acid, when condensed with ethylene glycol, gives a suitably high melting superpolymer (Terylene) which can be spun and drawn into a strong fiber and is quite resistant to hydrolytic attack. Filaments of Terylene, when first spun, are weak and highly extensible. It is possible to produce either very strong yarn with relatively low extensibility or somewhat weaker yarns with correspondingly increased extension at break. Terylene possesses a high initial modulus of elasticity and high wet strength. It is unaffected by dry cleaning solvents and is resistant to bleaching agents. (*Cf.* TTD: 12-46, p. 539.) TTD: 6-47

**Tapered filaments.** Johannes Alfthan & Reuben T. Fields (to E. I. du Pont de Nemours & Co.). USP 2 418 492, Apr. 8, 1947.

Tapered fibers of synthetic linear polyamides, suitable for use in brushes, are made by extruding the molten material at a constant rate through a spinneret into a cooling bath and withdrawing the filaments so formed, first at an increasing rate, then at a decreasing rate, then at a minimum constant rate. The period of the decreasing rate is longer than that of the increasing rate. This schedule is repeated. Symmetrical tapered filaments are produced without close supervision and without waste. TTD: 6-47

**Vinyl resin.** Roland D. Glenn (to Carbide & Carbon Chemicals Corp.). USP 2 418 507, Apr. 8, 1947.

A vinyl resin formed by the emulsion polymerization of not more than 2 vinyl compounds, including a vinyl halide, which resin is not completely dispersed by the solvent at the spinning temperature, is intimately mixed with the solvent at an elevated temperature to form a dispersion which is then filtered under pressure. The temperature of the dispersion is maintained at 80 to 100°C for 5 min. or more before spinning at 35 to 55°C. A dispersion of greatly improved spinning characteristics is produced in this way. TTD: 6-47

**Vinyl chloride copolymer.** Leland C. Shriver & Geo. H. Fremon (to Carbide & Carbon Chemicals Corp.). USP 2 420 330, May 13, 1947.

Vinyl chloride and acrylonitrile are polymerized conjointly in an autoclave. The charge contains 83.5-98% vinyl chloride. The product is soluble in acetone and is valuable in the production of artificial fibers which will not soften in boiling water and which do not shrink excessively at 100°C. Once the fibers have been shrunk, they remain dimensionally stable up to 125°, and at 150°C, the shrinkage is only about 8%. The resins are also soluble in a number of other solvents. TTD: 6-47

**Vinyl resin filaments.** Edw. W. Rugeley, Theophilus A. Feild, Jr. & John L. Petrokubi (to Carbide & Carbon Chemicals Corp.). USP 2 420 565, May 13, 1947.

Filaments and yarns may be spun from certain vinyl resins produced by the polymerization of a vinyl halide and acrylonitrile containing between 45 and 80% of the halide in the polymers by either a wet or dry spinning process. The products have exceptionally high softening temperatures, excellent dyeing properties, and the surprising property of being readily stabilized dimensionally against subsequent shrinkage even when exposed to temperatures somewhat above 100°C. The spun yarn is stretched to impart increased tensile strength and true elasticity, and is then stabilized to control subsequent shrinkage at elevated temperatures; to increase the elongation and flexibility of the yarn and to improve the resistance of the yarn to stresses normally encountered during processing operations such as knitting and weaving and during normal service. The filaments have low water absorbency, are resistant to chemical, bacterial, and fungal attack, and do not support combustion. They may be dyed at the boil with acetate-type and with certain acid-type dyes. The yarns are thermoplastic. TTD: 6-47

## Fiber applications I 5

**Wool-feather filling.** Isaac Rubinstein. USP 2 419 732, Apr. 29, 1947.

Wool or other nap is carded to form a fluffy and resilient mass; chicken feathers are treated in the same way. The wool and feathers are then mixed and carded and combed a second time to interlock them. The mixture is next saturated with a liquid such as water, which will cause the wool to swell and better engage the feathers, which are not affected by the liquid. The filler is then dried and ready for use. A preparation of 50% of each is recommended, but up to 90% of chicken feathers may be used. The product is resilient and is superior to mixtures of wool and down for bedding and upholstery. TTD: 6-47





**Insulating material.** Herman & Irwin J. Rumpf. USP 2 419 971, May 6, 1947.

An improved padding of loosely matted hair or fiber is made with a corrugated interlayer between 2 flat outer surfaces, or 2 corrugated layers interleaved with each other. These corrugations stiffen the padding so that the material may be secured to the rafters or studding of a building without intermediate sheathing or backing surface. When the padding is to be used for the absorption of physical impact, rubber latex or a synthetic elastic adhesive is used; for improving the acoustics of a room, nonelastic but pliable adhesives are used. TTD: 6-47

## Fiber processing I 6

**Decortication.** British machinery for hard fiber decortication. Anon. *Fibres, Fabrics & Cordage 14,* No. 1, 32-3 (Jan. 1947).

Recent modification in design of equipment for sisal and coir fiber extraction, introduced as a result of observation and research under actual working conditions overseas, are described. TTD: 6-47

**Synthetic yarn treatment.** Herbert O. Naumann (to North Am. Rayon Corp.). USP 2 416 533, Feb. 25, 1947.

Synthetic thread is treated with various liquids immediately after the filament is formed, and then dried, sized, and twisted to a controlled extent. The apparatus described occupies very little space and is economical of manpower and of the treating substances used. The treating liquids are kept uncontaminated in their respective zones, while the thread is passed from one zone to the next in the form of a single layer of travelling helices. TTD: 6-47

**Drying wool.** S. A. Peignage de Tourcoing. Brit. P. 578 731. *Textile Mfr. 72,* 610 (Nov. 1946).

Wool is passed through a drying chamber between a horizontal fixed grid beneath it and an endless lattice conveyor above, being raised into contact with the lattice (and out of contact with the grid) by an upward current of air ascending through the grid. TTD: 6-47

## INORGANIC FIBERS II

**Glass laminate denture.** La Mar W. Harris & Lloyd W. Colton. USP 2 418 833, Apr. 15, 1947.

An improved laminated material for use in artificial dentures, consists of a woven fiber glass fabric (preferably) impregnated with a vinyl butyral which has been modified by the addition of about 25% of a phenol-formaldehyde resin. TTD: 6-47

**Glass fibers.** Ed Fletcher & Henry Snow (to Owens-Corning Fiberglas Corp.). USP 2 418 873, Apr. 15, 1947.

In an apparatus for producing glass fibers by passing a molten material between 2 intermeshing gears, air is blown to opposite sides of the fiber in its general direction of travel to reduce the tendency of the fiber to bend and break when projected into air. The process is particularly applicable to glass fibers but may be applied to other thermoplastic materials. TTD: 6-47

**Glass cloth laminate.** John Delmonte (1/10 to E. F. Lougee & 65/100 to Hemphill Co.). USP 2 419 440, Apr. 22, 1947.

Melamine-formaldehyde resin is mixed with approximately equal parts of plaster of Paris, with sufficient water added to form a paste, and the paste used to form laminates of glass cloths on suitable forms. TTD: 6-47

## FIBER TO YARN III

**Worsted drawing and twisting.** Worsted industry. R. S. Audley. *Fibres 8,* 10-13 (Jan. 1947).

Little change has taken place in the number of processes employed in worsted open drawing because of the lack of adequate testing methods to enable yarn levelness or regularity to be assessed. A simple, foolproof machine for commercial use, that will test yarn regularity quickly is greatly needed. TTD: 6-47

### Fiber preparation III 1

**Card setting.** Importance of accuracy in card settings. Anon. *Indian Textile J. 57,* 143-5 (Nov. 1946).

Reduction in waste, without yarn deterioration, can be secured by accurate card setting. A setting of 34/1000" is recommended in general. TTD: 6-47

**Cards.** New big cards. Anon. *Am. Wool Cotton Reptr. 60,* No. 52, 22 (Dec. 26, 1946).

A brief note on a wool card (New England Machine Co.) having a 96" diameter cylinder, which cards both top and bottom. It is indicated from experimental operation that further designing is needed for satisfactory operation.
JAW TTD: 6-47

**Opening.** New bale opening machine. Anon. *Textile Recorder 64,* No. 765, 47-8 (Dec. 1946).

A new machine (invented by W. Frost), occupying a minimum of floor space, passes the bales to and fro over spiked cylinders which take off a thin layer of cotton from the underside of the bale, just as a planing machine planes off thin shavings from a plank of wood. The cotton removed by the cylinder comes into contact with





2 spiked rails set about 3/16" from each side of the cylinder, which opens the cotton still further. When about 1/4 of a bale remains to be opened, a new bale is placed on top. In actual practice, it is noted that the machine could be enlarged to accommodate 8 or 12 bales at a time. Cotton from 3 bales of 4 different marks (*i.e.* 12 bales) could be blended at one time on a machine. TTD: 6-47

**Long fiber yarn.** Saml. E. Thomas & Walter R. Guthrie; USP 2 418 995; (to Lehigh Spinning Co.); USP 2 418 996-8, Apr. 15, 1947.

Long, hard, raw fiber (having a minimum length of 2-3') of natural or synthetic origin is fed into a Good machine under precision control, consisting of a balance for weighing the fiber, a speed indicator, and auxiliary mechanisms; and a solvent emulsion is applied as it travels through the machine. Sliver laps are collected in a roll under pressure but without any longitudinal tension in the fibers and may then be unwound uniformly and without substantial entanglement with fibers of adjacent lap. TTD: 6-47

**Staple fiber production.** Jas. L. Lohrke. USP 2 419 320, Apr. 22, 1947.

A sliver of continuous filaments is intermittently deflected so that the individual filaments are bent sharply while under tension and broken without being stretched as much as if longitudinal tensioning alone were used to break the filaments. The sliver is flattened to reduce the pressure required in the breaking rolls. A rotary breaking device is placed between 2 sets of drawing rolls and is provided with breaker edges which are moved in and out of contact with the sliver as the device rotates. TTD: 6-47

**Hand carding tool.** John W. Weber & Chas. R. Davies (to Proctor & Schwartz, Inc.). USP 2 419 748, Apr. 29, 1947.

This is a device for cleaning fibers from between and around the base of the wire card clothing, and from the spaces between, and the gullets of the teeth of Garnett wire, on the cylinders, doffers, workers, strippers, and other rolls of carding and Garnett machines. It may also be used as a hand carding tool. It is designed so that the sheet of card clothing is held under tension in one direction to maintain the wires in an upright position for use, and so that it may be readily removed and replaced. TTD: 6-47

**Manufacture of yarn.** Malcolm Hain. USP 2 419 774, Apr. 29, 1947.

This is a modification of the sliver-drawing device claimed in USP 2 197 638, in which there is a single driven roll between the pairs of drawing and retaining

rolls. In the new device, this driven roll is replaced by a pair of driven rolls and the 2 pressure rolls are replaced by a single pressure roll which is larger in diameter. The pressure required for gripping the sliver is produced by a lever and carrier system disclosed in copending application serial no. 609 531. Since 2 rolls are driven instead of one, the sliver and the vagrant fiber are better controlled, and since the pressure roll is larger than the others, the traction on the fiber is more extended and the possibility of fibers becoming wound around its trunnions is reduced. TTD: 6-47

**Fiber separation.** Robt. A. Fairbairn. USP 2 420 033-6, May 6, 1947.

The relatively coarse and fine fiber in cashmere and similar fleeces are separated by carding, the web thus formed being then fed into a pair of drafting rolls. One of these rolls has a higher speed than the other and a moist surface to which the fibers tend to cling, and one of them has peripheral cutting elements arranged parallel to the line of contact of the rolls. The coarse fibers are cut into short lengths which adhere to the moist surface of the roll and are thus separated from the fine fibers. At the same time the fibers are arranged in parallel and the carded web reduced to a single fiber thickness.
TTD: 6-47

**Fluffed staple fibers.** Norma B. Geer & Louis W. Schatz (to Celanese Corp. of Am.). USP 2 420 367, May 13, 1947.

Staple fibers are opened and fluffed up by subjecting compact bundles of fiber to the action of a rotary drum having on the surface thereof pins or nails and operating in a bin or box. The fluff material is readily made into a lap by the usual methods. Static charges on the fibers are avoided by lining the fluffing bin with a sheeting of metal such as copper and grounding the sheets. This product may be used advantageously as filling for pillows, comforters, sleeping bags and the like.
TTD: 6-47

**Nubbed yarns.** Alexander Cavedon. USP 2 421 010, May 27, 1947.

A device for supplying extra material at regular intervals to the web of a wool card between the doffer and condenser to create nubs of surplus fibers at regular intervals.
SPH TTD: 6-47

**Reducing card dust.** D. Walsh. Brit. P. 578 571. *Textile Mfr. 72,* 608 (Nov. 1946).

On revolving-flat carding engines the flats are altered so by the use of baffles mounted on one face, that dust is prevented from being thrown into the atmosphere.
TTD: 6-47





## Blends III 2

**Blended fabrics.** Blended fabrics continue their progressive march. Anon. *Am. Wool Cotton Reptr. 60,* No. 49, 11-12, 43 (Dec. 5, 1946).

Satisfactory blending of fibers requires care during picking and carding. Carding is important because it is the best method for distributing fibers. The variety of weaves and constructions possible is a consideration tending to make blended fiber fabrics desirable.
JAW TTD: 6-47

**Rayon-asbestos blends.** Rayon and asbestos blends. Howard E. Shearer, Am. Viscose Corp. *Fibre & Fabric 100,* No. 3232, 6 (Jan. 11, 1947); *Am. Wool Cotton Reptr. 61,* No. 48, 91-2 (Nov. 28, 1946); *Textile Age 10,* No. 11, 16 (Nov. 1946).

The use of rayon staple as a carrier yarn to improve the spinning quality of asbestos is briefly described.
JAW TTD: 6-47

## Spinning III 3

**Fancy yarns.** Fancy folded and novelty effect yarns. Anon. *Textile Mfr. 72,* 591, 606 (Nov. 1946).

Distinctive effects are produced by twist and color combinations with differing fiber and yarn characteristics. Some examples are described and illustrated.
TTD: 6-47

**Jute spinning.** Modern jute spinning. Flaxman. *Textile Recorder 64,* No. 764, 44-5, 48, No. 766, 45-6, 50 (Nov. 1946; Jan. 1947).

In a brief general survey of the carding process, including the stripping operation, it is pointed out that the introduction of the 1-card system is the outstanding technical development during recent years. This breaker-finisher card combines the essential features of both units, being suitable for the preparation of coarse and medium yarn counts. The advantages over the 2-card system include: lower capital cost, labor saving, reduced floor space, higher spinning output, and the production of a stronger yarn. TTD: 6-47

**Mule spinning.** Mule spinning. W. J. Guy. *Textile Recorder 64,* No. 766, 40, 42 (Jan. 1947).

In cotton mules, there appears but small possibility of improving production by increasing spindle speeds beyond those in common use; but in the woolen trade, there is much more scope for higher speeds than formerly. The Rabbeth type bolster, which accommodates itself to unbalanced loads, is now being applied, so that steady running is now possible, with spindle speeds exceeding 5000 rpm. TTD: 6-47

**Roll pickers.** Automatic roll pickers. Anon. *Cotton 110,* No. 12, 66-9 (Dec. 1946).

Automatic devices for picking rolls on spinning and roving frames are briefly surveyed on the basis of information received from 19 different mills. Three types are mentioned: pneumatic, electrical, and mechanical. TTD: 6-47

**Twist designation.** Twist designation. Tester. *Textile J. Australia 21,* 710-12 (Dec. 1946).

Twist designation is briefly discussed and the justification for the terms *s* and *z* twist explained with the aid of simple diagrams. TTD: 6-47

**Weft spinning.** Cap spinning—single weft on spools. Anon. *Textile Mfr. 72,* 586 (Nov. 1946).

In spinning single weft yarn, extra care should be taken in the drawing. Single yarn of equivalent thickness to 2-ply yarn is cheaper to produce than the 2-ply. Correct setting of the lifter is important in building a good spool. TTD: 6-47

**Worsted spinning.** Newnan system of worsted spinning. Wyllys H. Taylor & Karl B. Nixon. *Am. Wool Cotton Reptr. 60,* No. 51, 35, 45, 47, 49 (Dec. 19, 1946).

Spinning on the Bradford & French systems is briefly discussed historically, and the production of fine worsteds on the cotton system as practiced in certain mills (particularly one using the Casablancas system) is described. TTD: 6-47

**Tire cord.** Alden H. Burkholder, Geo. P. Standley & Kenneth M. McLellan (to Industrial Rayon Corp.). USP 2 419 055, Apr. 15, 1947.

Cord suitable for use in rubber tires is produced by uptwisting heavy yarns having an initial twist. By plytwisting yarn having an initial twist, the ensnarling of yarn being withdrawn with the yarn remaining on the supply package is minimized. Two or more strands of the ply-twisted yarn are wound parallel on a suitable collecting package, from which they are withdrawn and uptwisted in a direction opposite to the ply-twist to produce the finished cord. TTD: 6-47

## Winding III 4

**Spooler tenders.** Figuring work loads for spooler tenders. Robt. M. Stanton. *Cotton 110,* No. 12, 70-2 (Dec. 1946).

In a comparison with the old and the new automatic high-speed spoolers or winders, it is suggested that a time study would be useful in determining work loads and the efficiency of tenders.
JAW TTD: 6-47





**Winding.** Modern aspects and developments in winding. H. Marsden. *Textile Recorder 64,* No. 765, 53-5, 67 (Dec. 1946).

The use of electrical control of yarn and machines during winding and of electro-hydraulic, electro-pneumatic, and electro-magnetic devices is increasing. A new warping creel has an electronic relay in the detector circuit to bring the warping machine stop motion into operation. The positively-driven beam on a horizontal section warping machine is fitted with an electronic controller of beaming speed to keep yarn speed constant, despite the increasing beam diameter. Other developments concern the use of stainless steel, aluminum and magnesium alloys, plastics, in printing machine surfaces, one-point lubricating systems, and oil impregnated bearings. TTD: 6-47

**Yarn winding machine.** Loftus H. Bateman (to Arundel Coulthard & Co., Ltd.). USP 2 419 003, Apr. 15, 1947.

A device for cross-traversing yarn while it is being wound onto a yarn package is described. It consists of 2 intergeared parallel rollers spaced a short distance apart, one of which drives the yarn package and has a single helical groove which extends sufficiently to give the yarn the full length of traverse desired and turns back for a short distance at both ends. This groove lays the yarn on the package at both reversals and in one direction between reversals. The other roller has a spiral groove which traverses the yarn only in the opposite direction. TTD: 6-47

**Thread-advancing reel.** Richard W. Stanley (to Am. Viscose Corp.). USP 2 419 605, Apr. 29, 1947.

A reel capable of handling strong and heavy yarns, and with an improved internal sealing structure to protect the bearings and moving parts from corrosive action is described. The improvement is especially applicable to long reels having heavy bars needed to support long helices while being subjected to a number of treatments by liquids in succession. TTD: 6-47

**Textile marking apparatus.** Hans J. Theiler (to Whitin Machine Works). USP 2 421 366, May 27, 1947.

A device is attached to winding machines to automatically mark the bobbins or packages as they are delivered, with a fugitive dye of a code color to indicate the kind of yarn on the bobbin or package.
SPH TTD: 6-47

## Yarn processing III 5

**Yarn drier.** Multifan yarn drying machine. Anon. *Textile Recorder 64,* No. 765, 44-5 (Dec. 1946).

Hanks of yarn of any type, placed on poles, which are

positively rotated, are passed through the drying chamber. The multifan drier is designed to facilitate an even flow of a large volume of air at a comparatively low temperature across the width of the machine so that the yarn is dried uniformly. TTD: 6-47

**Thread drier.** Francis H. M. New. USP 2 420 399, May 13, 1947.

A method and apparatus for automatically drying to a predetermined degree of dryness, by means of radiant heat, continuous materials such as filaments, thread, and the like, comprise mechanical means to carry the materials past infrared lamp banks with means provided for controlling the voltage to the lamp banks through a moisture-sensitive element such as a rayon ribbon. Controls are also provided, so that changes of speed also cause changes of voltage on the lamp banks, which result in consistent drying over a speed range.
SPH TTD: 6-47

**Yarn advancing reel.** Arthur E. Guenther & Lee B. Molyneux (to E. I. du Pont de Nemours & Co.). USP 2 420 537, May 13, 1947.

A device for threading yarn on a yarn advancing reel, enclosed in a steam casing, consists of a threading key with a means of releasing the key when it reaches the point of delivery and the necessary flexible seals to allow access to the casing without loss of steam.
SPH TTD: 6-47

**Twist-set yarn.** Hayden B. Kline & Alden H. Burkholder (to Industrial Rayon Corp.). USP 2 421 334-5-6, May 27, 1947.

The patent covers several types of conveyors for passing various types of nonmetallic, twisted, filamentary materials through a high-frequency electrical field for the purpose of twist-setting. A number of types of conveyors and a number of types of electrodes are covered. Nine examples of different types of packages and different types of yarn, with the necessary type of conveyor and electrodes, are given.
SPH TTD: 6-47

## Yarn products III 6

**Plastic cord.** Plastic cordage novelty. Anon. *Jute & Canvas Rev. 18,* No. 222, 11 (Mar. 1947).

Chemclad (Carolina Industrial Plastics Corp.), a new type of cordage consisting of a superstrength rayon core surrounded by a polyvinyl chloride plastic jacket, has exceptional strength, low stretch, and great abrasion resistance. It is weather-, rot-, and flameproof and is especially useful for clothesline, awning ropes, and the like. TTD: 6-47





**Rope.** Practical rope maker. I. Anon. *Fibres, Fabrics & Cordage 14,* No. 1, 18-23 (Jan. 1947).

Mechanical details of hackling machines are given.
TTD: 6-47

**Thread and cordage.** Modern thread and cordage manufacture. Anon. *Fibres 7,* 318-20, 347-50 (Nov., Dec., 1946).

Processes preparatory to spinning are briefly reviewed and include consideration of various systems of yarn number, number of drawing frames, and roving. A maximum of 5 drawings and a roving frame is needed in producing medium and high-grade thread yarns from flax and hemp; for twine and light cordage yarns only 2 drawings and a roving frame are adequate. Spindle speed is the main factor limiting output of the roving frame. Arrangement of spindles and gearing of the carrier shafts of bobbins are discussed and reference is made to the quick doffing roving frame. TTD: 6-47

**Transparent thread.** John Irwin, Jr. USP 2 418 771, Apr. 8, 1947.

Transparent or translucent threads will take on the color of the material upon which it is used. Their use eliminates the necessity of matching the thread to the fabric. TTD: 6-47

**Bonded cord.** Emerson A. Tippetts (to E. I. du Pont de Nemours & Co.). USP 2 419 922, Apr. 29, 1947.

This is a process for applying an adhesive or bonding agent to a reinforcing material such as cords without substantially decreasing the tenacity. The cord is maintained at a definite tension during the application of an adhesive or bonding agent. This restricts its penetration to the surface of the cord. The process is used especially in connection with cords possessing a low degree of twist, which have been prepared from continuous high tenacity filaments, such as are described in USP 2 235 082 to Parker and 2 188 174 and 2 235 867 to Castricum. TTD: 6-47

**Cord treatment.** G. C. Brentnall & H. Smith (to Dunlop Rubber Co., Ltd.). Brit. P. 578 555. *Textile Mfr. 72,* 609 (Nov. 1946).

Cord is treated with liquid by bringing it over guide pulleys into contact with the periphery of a frusto-conical wheel which in turn is in contact with the liquid.
TTD: 6-47

# YARN TO FABRIC IV

## Yarn preparation IV 1

**Warp sizing.** Cotton warp sizing. Paul V. Seydel. *Cotton 110,* No. 12, 82-4, 149 (Dec. 1946).

The properties of various gums (*e.g.* locust bean, Tragasol, Arabic, Carrageen, sugar beet, and others) and problems of their purification are briefly discussed and the natural and synthetic gums compared.
JAW TTD: 6-47

**Yarn conditioning.** Modern methods of conditioning cotton yarns. Anon. *Textile Recorder 64,* No. 766, 43-4 (Jan. 1947).

The advantages of machine conditioning are pointed out, and the latest Hygroscop machine is described.
TTD: 6-47

**Sizing yarn packages.** Luther B. Arnold, Jr. (to E. I. du Pont de Nemours & Co.). USP 2 419 756, Apr. 29, 1947.

The sizing composition is an aqueous non-mucilaginous emulsion of a soapy or waxy material having a softening point in the range 30-70°C. Among the suitable waxy materials are synthetic (wax) esters of saturated or partially saturated fatty acids with aliphatic alcohols; the natural wax esters, such as Japan wax, carnauba wax and spermaceti; and the crystalline, microcrystalline, or amorphous paraffin waxes. Among the soapy materials are the sodium and potassium salts of partially saponified fats or partially saponified wax esters. These various materials may be blended with small amounts of mineral or vegetable oils to adjust the consistency of the mixture. Suitable emulsifiers and homogenizers may be added. The sizing composition is dispersed with an aqueous medium so that it constitutes 5-25% of the dispersion. The size is uniformly distributed throughout the package of yarn and even the innermost yarns of the spun cake are thoroughly impregnated. The running properties of a yarn sized according to this process are excellent, particularly in knitting machines which yield flat knit fabrics, as in the manufacture of full-fashioned hosiery. TTD: 6-47

**Moistening knitting yarns.** Wm. Coleman (to Johnson City Mills). USP 2 420 355, May 13, 1947.

The yarn is passed through rings partially immersed in a container holding a moistening and size-softening solution. These rings are rotated in contact with the travelling yarn and they bring up and deposit the moistening solution onto the yarn. They also hold the yarn under tension. The device is especially applicable to yarns for nylon stockings, which are heavily sized, and prevent the clogging of the needle latches and other parts of the knitting machine. TTD: 6-47

**Yarn size.** Walter R. Haefele (to E. I. du Pont de Nemours & Co.). USP 2 421 122, May 27, 1947.

The water-sensitivity of water-soluble or water-dispersible hydroxylated polyvinyl resin is modified by adding





$BaCl_2$, which seems to be unique among the inorganic salts in its ability to lower and control the water-sensitivity of polyvinyl alcohol. The process is applicable to any water-insensitive synthetic linear polymer yarn, such as vinyl chloride-vinyl acetate interpolymers, polymerized methyl methacrylate, polyvinyl chloride, chlorinated polyvinyl chloride, high molecular weight ethylene polymers, vinyl chloride-vinylidene chloride copolymers, and acrylonitrile and copolymers thereof. By the term water-insensitive it is meant that the individual filaments of the yarn absorb less than 10% of their weight of water at 25° and 100% r. h. The product is easily applied to the yarn and easily removed from the resulting fabric, and it deposits a solid coating that is not quickly dissolved. The sized yarn runs through a water-wet wick or other humidifying treatment without becoming gummy and without fouling the needles and sinkers of the knitting machine. Yarns sized with this material knit very well and produce sheer full-fashioned stocking fabrics, free of snags and pulled threads. The product can also be used as a size for water-insensitive weaving yarns. TTD: 6-47

**Conditioning yarns.** Harold J. Walter & Paul R. Rose. USP 2 421 135, May 27, 1947.

Threads or yarns, such as warps, are given an optimum moisture content by passing them under tension through a chamber through which air containing controlled amounts of water vapor is also passed. This improves the elasticity, meshing qualities, and tensile strength so that the yarns are in optimum condition for manufacture into cloth. TTD: 6-47

## Weaving IV 2

**Picking motions.** Weft insertion—VIII. S. A. G. Caldwell. *Textile Mfr. 72,* 573-4 (Nov. 1946).

The cone overpick and underpick motions are briefly considered, particularly with reference to the shedding motions. The overpick motion is used largely on jute looms while both over- and underpick motions are used in linen weaving. TTD: 6-47

HANDLOOM WEAVING INDUSTRY IN INDIA—ITS PAST, PRESENT, AND FUTURE. M. P. Gandhi. Gandhi & Co., Bombay; 1946; 60 pp.; price Re. 1-4-0.

Reviewed in *J. Sci. Ind. Research (India) 6,* 34 (Jan. 1947). TTD: 6-47

## Looms IV 2 a

**Jacquard loom.** Recent advances in jacquard construction. Anon. *Textile Recorder 64,* No. 765, 41-3 (Dec. 1946).

The latest double-lift, double-cylinder, open-type Ameri-

can jacquard with 1304 needles, incorporating a new system of equalizing the movements of all hooks, is illustrated and briefly described. Also described is a center-shed Vincenzi pitch jacquard having a reversing lever which will unweave the cloth back to the desired pick. TTD: 6-47

**Jacquard loom.** Improvements in jacquard construction. Anon. *Textile Recorder 64,* No. 766, 49-50 (Jan. 1947).

Modernization of double-lift, single, or double-cylinder coarse pitch machines (Dracup) is briefly described and illustrated. TTD: 6-47

**Shuttles.** Shuttles. Anon. *Fibres 8,* 27 (Jan. 1947).

The points to be observed when choosing shuttles and preparing them for looms are discussed. TTD: 6-47

**Sulzer loom.** Pirnless shuttle loom. Anon. *Jute & Canvas Rev. 18,* No. 221, 18 (Feb. 1947).

A brief descriptive note lists some of its advantages. TTD: 6-47

**Picker stick.** David L. Norris, Sr. & Wm. N. Cundiff (to Norris Bros, Inc.). USP 2 419 086, Apr. 15, 1947.

A longitudinal slot is cut in a wooden picker stick and filled with fiber impregnated with a phenolic condensation product under pressure. The reinforced stick has the resiliency of a conventional solid wooden picker stick, but is many times stronger. TTD: 6-47

**Bobbin and weft carrier.** Albert Morf. USP 2 419 415, Apr. 22, 1947.

The bobbin consists of a hollow tube of injection-molded artificial resin provided with internal splines, a metal cap at one end, and an externally corrugated metal ferrule at the other end. This has the advantages of greater strength, greater surface hardness, insensitivity to moisture, and absolutely rigid and firm bonding of the parts. TTD: 6-47

**Shuttle and bobbin.** Walter L. Williamson. USP 2 420 216, May 6, 1947.

A design for a shuttle in which the bobbin is carried on a pin, the end of which is pivoted in the shuttle body. The object is to provide more bobbin space without increasing the shuttle size.
SPH TTD: 6-47

**Loom with gripper shuttles.** Albert Moessinger (to Sulzer Frères, S. A.). USP 2 420 380, May 13, 1947.

This invention relates to a method of weaving by means of a number of small shuttles with grippers to carry the





end of the filling yarn through the shed. The filling is supplied from stationary packages of yarn. Each shuttle is moved into a position where it grips the end of the yarn. It is then shot through the shed by a suitable mechanism, carrying the yarn with it. On the receiving end, it is caught and transferred to an endless conveyor where it is returned to the starting position. The filler yarn is clipped off on each side of the fabric, near the edge. There are a number of shuttles on the return conveyor so that one is always ready to move into place at the beginning of each pick.
SPH TTD: 6-47

**Filling replenishing loom.** St. Julian Geddings. USP 2 420 473, May 13, 1947.

On an automatic filling replenishing loom, means are provided for a fine adjustment for the arm of the weft hammer with respect to the contact part of the filling replenishing mechanism. An easy adjustment of the weft hammer arm, both horizontally and vertically, is provided.
SPH TTD: 6-47

**Picker-stick drive.** Juan E. Roig. USP 2 420 841, May 20, 1947.

The device consists of a cam which gives reciprocating motion to a driven member. This reciprocating motion is translated to oscillating motion through a rack and pinion. Oscillation of the pinion shaft drives the picker stick.
SPH TTD: 6-47

**Tatting shuttle.** Gustav A. Carlson (to Boye Needle Co.). USP 2 420 861, May 20, 1947.

A tatting shuttle, having the arms arranged to provide lead grooves for the thread for greater ease in winding the thread on the shuttle is provided with an integral pointed, arcuate end for use in forming picots.
SPH TTD: 6-47

**Spent bobbin receiver.** Richard G. Turner (to Crompton & Knowles Loom Works). USP 2 420 918, May 20, 1947.

A light canvas bag is supported on a skeleton metal frame, readily detachable from the loom. This bag replaces the old sheet-metal cans used on looms previously.
SPH TTD: 6-47

**Loom selvedge needle.** Harold Hoeber (to Textile Research Co.). USP 2 420 952, May 20, 1947.

A selvedge needle is provided with suitable mounting on the temple frame. The needle moves in and out of the cloth in a plane parallel to the reed. It is actuated by a cam on the cap bar of the lay.
SPH TTD: 6-47

**Shuttleless loom.** W. Williamson (to M. Wright & Sons, Ltd.). Brit. P. 578 808. *Textile Mfr. 72,* 610 (Nov. 1946).

An improved mechanism drives the selvedge shuttle on looms using a stationary weft supply. TTD: 6-47

**Shuttle pegs.** J. Lakeland. Brit. P. 578 924. *Textile Mfr. 72,* 610 (Nov. 1946).

Shuttle pegs are provided with increased gripping surfaces, so as to hold cops or tubes more securely, through shallow, inclined grooves, which may be inclined in one direction or in alternate directions. TTD: 6-47

## Control devices — IV 2 b

**Letoff mechanism.** Oscar V. Payne (to Crompton & Knowles Loom Works). USP 2 419 419, Apr. 22, 1947.

Means are provided for manipulating the warp beam without interference from the weight which tensions the warp by locating the guide from which the weight is suspended on the forward part of the beam structure. This is accomplished by leading the weight-supporting chain upward from the guide and over guide pulleys, then downward to the weight. The weight does not swing, which prevents injury to workmen. TTD: 6-47

**Safety device for looms.** Henri Bricout (to Comptoir Linier). USP 2 419 437, Apr. 22, 1947.

Electrical circuits are used to cut off the power when the tension on any yarn is relaxed. Visual and acoustic signals are also provided. TTD: 6-47

**Loom control.** Clarence R. Kronoff & Archibald J. Herard, Jr. (to Crompton & Knowles Loom Works). USP 2 420 178, May 6, 1947.

A mechanism is described for the safe handling of large rolls of thick cloth, such as terry towelling, while removing them from the loom. TTD: 6-47

**Warp let-off motion.** Henry Lakeland. USP 2 420 957, May 20, 1947.

A special mounting for the loom beam and the back carrier roller is provided so that the carrier roll can move forward and back about an axis through the center of the warp beam. Rotation of the beam is caused by a ratchet mechanism and worm gear driven by the slay sword. If the warp becomes too tight, the carrier roller is pulled forward, increasing the rate of rotation of the beam. If the warp is too slack, the carrier roller moves back, decreasing the rate of rotation of the beam. The result is a warp of uniform tension at all times.
SPH TTD: 6-47





**Shuttle box binder.** Wm. Languirand (to Textile Research Co.). USP 2 420 994, May 20, 1947.

A shuttle box binder is provided with adjustments one of which is a micrometer screw adjustment to regulate the pressure against the shuttle. The object is to get better control of the shuttle in the box.
SPH TTD: 6-47

**Warp let-off.** W. Williamson (to M. Wright & Sons, Ltd.). Brit. P. 578 418. *Textile Mfr. 72,* 608 (Nov. 1946).

A compact warp let-off device is suitable for looms having a number of beams. TTD: 6-47

## Fabric construction — IV 2 c

**Crepe-like rayon.** Acetate and spun rayon. Anon. *Am. Wool Cotton Reptr. 60,* No. 51, 68-9, 71, 73 (Dec. 19, 1946).

A crepe-like cloth constructed of acetate and spun rayon yarns is described and briefly analyzed. Differences between continuous and short fibers in the spun and filament yarn combination produce interesting luster effects. TTD: 6-47

**Woolen weaving.** Designing and weaving of woolens. Wm. L. Stuart. *Textile Recorder 64,* No. 766, 41-2 (Jan. 1947).

Factors influencing the quality and appearance of woolen and worsted fabrics are discussed, and it is concluded that more varied color patterns and more subtle colors and more weaves should be produced. It is pointed out that the jacquard handloom is still the best medium for experimental designing. TTD: 6-47

**Wool-type fabric.** Wm. S. Nutter (to Goodall-Sanford, Inc.). Re 22 878/USP 2 416 116, May 13, 1947.

This is a novel fabric, designed to replace a standard wool fabric formed with 2-ply wool fiber warp and filling and having the same weight per sq. yard as the standard fabric. The new fabric consists of yarn of wool fibers having at least 25% less filling picks and 25% less warp ends than the standard. The filling is a single yarn having not more than 75% of the twist of the yarn plies of the standard fabric. The warp is a 2-ply yarn, the plies of which have a similar twist to, and half the size of, the single yarn. The yarns are impregnated with a soft plastic in amount sufficient to equalize the weight of the fabric to that of the standard fabric. The object is to reduce the cost of the fabric, reduce the quantity of wool, and increase the tensile strength of the yarn.
SPH TTD: 6-47

**Wide-mesh fabric.** Harry Kittner. USP 2 418 775, Apr. 8, 1947.

An open-mesh fabric, particularly canvas, as a foundation fabric for needlepoint, is produced by moving 2 groups of warp threads to form an open shed, inserting teeth between certain of the adjacent warp threads at the base of the shed, inserting a weft thread through said shed at the rear of said teeth, beating up the weft thread against the teeth, closing the shed, and removing the teeth from between the warp threads. TTD: 6-47

**Matching fabrics.** Alexander Cadous. USP 2 419 389, Apr. 22, 1947.

To make garments containing nonstretchable and stretchable fabrics, the stock is dyed and portions of the same dye-batch allocated in the ratio required for each type of fabric. These portions are then subdivided for the warp and filler. The warp yarns are given a higher twist to increase their strength, especially for the stretchable yarn. A pick count is selected so that both fabrics will have the same count after shrinkage. The combined fabrics in the finished garments are properly matched. TTD: 6-47

TEXTILE DESIGN AND COLOR. Wm. Watson. Edition 5. Longmans Green & Co., London; 513 pp.; price 25s.

Reviewed in *Textile Recorder 64,* No. 766, 44 (Jan. 1947). TTD: 6-47

## Knitting machines IV 3 a

**F. N. F. machine.** F. N. F. warp knitting. Anon. *Fibres 7,* 360-2; *Textile Recorder 64,* No. 765, 38-40, 43 (Dec. 1946).

The F. N. F. warp knitting machine (developed jointly by Courtaulds, Ltd. and Morton Sundour, Ltd.) is further described and its operation explained and illustrated in some detail (*cf.* TTD: 10-46, p. 454). A test unit running for about 3 years has averaged about 1000 courses a minute under factory conditions. Weighing 2 3/4 tons and occupying a space 12 × 4 ft., it is best installed only on the ground floor. An important factor in obtaining the high operating speeds is the exceptionally strong needle, which is a departure from both the bearded and the latch types. TTD: 6-47

**Half-hose machine.** New Trent fancy half-hose machine. Anon. *Textile J. Australia 21,* 662, 728, 742 (Dec. 1946; Jan. 1947).

A new automatic knitting machine (Trent Eng. Co., Ltd.) is briefly described and illustrated with 4 photographs. The design of the hose, on the wrap-stripe principle, is discussed. Machines vary in sizes from 88





to 200 needles, popular gages being 168 needles (3 3/4″ cylinder diameter) and 176 needles (4″ cylinder diameter).

ELW TTD: 6-47

**Knitting loom.** Warp knitting looms. J. B. Lancashire. *Textile Recorder 64,* No. 766, 47-8 (Jan. 1947).

Warp looms, making warp-knitted fabrics, are divided into 5 broad classifications: (1) flat (chain), (2) Locknit (high speed), (3) Simplex (double-warp knitting), (4) Milanese, and (5) Raschel. These types are briefly reviewed and their special uses outlined. TTD: 6-47

**Knitting machine.** John E. Lyman & Patrick G. McCarthy (to Wm. Cotton, Ltd.). USP 2 416 632, Feb. 25, 1947.

A fluid-pressure mechanism for shogging the main cam shaft of a Cotton's patent or other straight bar knitting machine is claimed. TTD: 6-47

**Knitting machine thread guide.** Roy C. Amidon (to Vanity Fair Mills, Inc.). USP 2 418 445, Apr. 8, 1947.

A thread guide consists of a block having a bank of parallel guide blades. Each of the blades has an eye and at least one projection from its edge at a distance from the eye, which serves to hold the thread flat against the blade. TTD: 6-47

**Knitting machine.** Fritz Lambach. USP 2 419 222, Apr. 22, 1947.

A knitting machine is described in which the cams may be readily set in accurate positions and may be repeatedly set and reset in identical relative positions. A movable cam position indicator which can be readily attached is provided. TTD: 6-47

**Knitting machine needle.** Alvin Schwartz. USP 2 419 856, Apr. 29, 1947.

A spring-beard needle is constructed so that the closing of the beard in the casting-off operation is effected by the tension of the thread on the needle. The presser bar used to close the beard is thus eliminated without affecting the quality of the materials produced, and this makes it possible to use eccentrics in place of cams for reciprocating the needles and actuating the thread guide bar or bars and the sinker bar. This makes it possible to increase the speed of the machine. TTD: 6-47

**Knitting machine clutch.** Frederick E. Deans (to Bentley Eng. Co., Ltd.). USP 2 420 524, May 13, 1947.

An improved method of shifting the clutch on a circular

knitting machine of the type commonly referred to as a seamless hose or half-hose machine embodies suitable cams and levers to shift the clutch at the desired times, improving the timing and operation of the machine.
SPH TTD: 6-47

**Circular knitting machine.** Herman E. & Cecil Crawford. USP 2 420 771, May 20, 1947.

A method of knitting elastic stocking tops on a circular knitting machine wherein the elastic strand is laid in front of some of the needles and back of the others. Only the body yarn is fed to the needles by the conventional feed fingers.
SPH TTD: 6-47

**Knitting machine drive.** H. R. Brook. Brit. P. 578 596. *Textile Mfr. 72,* 609-10 (Nov. 1946).

A reciprocating mechanism for the cam box of a knitting machine allows an adjustable or a fixed length stroke.
TTD: 6-47

## Control devices — IV 3 b

**Stop mechanism.** Philippe E. H. Eichinger (to Gen. Cable Corp.). USP 2 419 518, Apr. 22, 1947.

A mechanism is provided which will stop a loom or knitting machine when the yarn supply breaks or terminates, or when defects such as lint, slubs, knots or kinks appear. An additional yarn-tensioning device is also provided which may be located some distance from the knitting head and which reduces the tension required and also the vibration of the yarn. The device is especially applicable to the knitting machines used to apply a fabric cover to insulated electric wires or cables.
TTD: 6-47

**Stop motion.** Chas. W. Arrowood. USP 2 420 513, May 13, 1947.

On a knitting machine, tension and control arms are provided which make an electric contact when the yarn breaks. Means are also provided to reduce the pressure between a pair of tension discs whenever the tension in the yarn increases beyond a predetermined amount.
SPH TTD: 6-47

**Knitting stop motion.** Allan C. Thomas (to Celanese Corp. of Am.). USP 2 421 092, May 27, 1947.

A light source and photoelectric cells are arranged to look at the entire width of the cloth directly behind the needles on a knitting machine. The output of the photoelectric cell is fed to an amplifier. The plate circuit of this amplifier operates a light-valve current meter. This light-valve breaks the beam of a second light source which operates a second photoelectric cell which acts as





a relay, stopping the machine or giving a visual or audible signal.
SPH TTD: 6-47

## Fabric construction — IV 3 c

**Alginate hosiery yarn.** Alginate yarn in hosiery. Anon. *Textile J. Australia 21,* 582, 634 (Nov. 1946).

In the production of socks, three-quarter hose, and the like, instead of the usual draw-thread, alginate yarn is knitted into the welts as the chain of socks comes from the machine, each sock thus being linked to the next by a few courses of alginate yarn. The socks are separated by cutting the alginate yarn, leaving the toes linked in the usual way. In a modified scouring process the alginate yarn is dissolved to leave the socks with clean welts. TTD: 6-47

**Hosiery.** Ladderproof stockings. J. B. Lancashire & J. C. Hurd. *Textile Recorder 64,* No. 764, 42-3, 76 (Nov. 1946).

The methods used to produce runproof stockings are described. Diagrams are given of the needles used and of the knitted materials produced. TTD: 6-47

**Knitted glove.** Eric Simmat (to Nolde & Horst Co.). USP 2 418 957, Apr. 15, 1947.

A method of knitting a seamless glove, with fashioned hand portions and thumb and finger extensions, by a continuous process is described. TTD: 6-47

**Hosiery knitting.** Jean Garric (to Société Industrielle de Bonneterie). USP 2 420 821, May 20, 1947.

A device to be applied to a flat knitting machine makes possible the use of new techniques in knitting stockings.
SPH TTD: 6-47

**Knitting stockings.** Walter Larkin (to Fidelity Machine Co., Inc.). USP 2 420 960, May 20, 1947.

A method of knitting light-weight, fine-gage stockings with a removable surplus of cheaper material at the top to prevent curling during the dyeing and finishing operations. This material is to be removed after finishing. The purpose is to eliminate the 2-ply welt which has been used and which is considered objectionable because of its extra thickness.
SPH TTD: 6-47

**Strip lace knitting.** Saml. Saftlas. USP 2 421 357, May 27, 1947.

A method whereby knitted lace trimming is produced on a circular knitting machine. At the sides of each pattern repeat, a vertical line is produced by omitting one or more needles or by dropping one or more stitches.

The tubular fabric is cut on these lines, leaving strips of knitted lace.
SPH TTD: 6-47

**Hosiery patterning.** C. F. Manger, G. A. Buswell & R. Peberdy (to Bentley Eng. Co., Ltd.). Brit. P. 578 815. *Textile Mfr. 72,* 610 (Nov. 1946).

A patterning means, operating through needle selectors on a circular knitting machine provides for knitting a heel by selecting the needles into 3 groups, thus assuring more accurate continuity of pattern over the instep.
TTD: 6-47

## Special fabrics IV 4

**Braider.** High speed braiding machine. Anon. *Jute & Canvas Rev. 18,* No. 222, 13, 19 (Mar. 1947).

The Hobourn machine, described and illustrated, is capable of operating at higher speeds than can normally be obtained. TTD: 6-47

**Towelling fabric.** Thos. Sumner. USP 2 418 676, Apr. 8, 1947.

The towel is constructed so that the threads adjacent to the respective ends and sides are stronger and give graduated increased strength in the towelling, the increased strength being adjacent to all of the margins of the towelling. TTD: 6-47

**Flexible tubes.** Nelson R. Henry. USP 2 418 974, Apr. 15, 1947.

An apparatus is described for shaping and sizing continuous lengths of preformed woven fiber tubing in which peripherally grooved feed rolls are used to engage the tubing and move it longitudinally, and the grooves jointly determine the exterior size and shape of the tubing. An elongated mandrel is designed to fit inside the tubing between the rolls and to define the interior size and shape of the tubing. The end of the mandrel is bent so that it cannot be drawn between the rolls as the tubing is moved between them. TTD: 6-47

**Braiding machine.** Geo. A. Stone. USP 2 419 741, Apr. 29, 1947.

A machine designed for the production of tubular insulating material, consisting of an inner and outer braid with slivers of insulating material between them, is described. The inner sheath is threaded through a central guide opening and the slivers are passed through surrounding guides. The outer sheath is woven around this. This product can be made of mineral fibers, such as spun glass. It is highly flexible and can be used on tortuous pipes or conduits. TTD: 6-47

**Braid.** Freeman W. Fraim (to Internatl. Braid Co.). USP 2 419 829, Apr. 29, 1947.





Braid for reinforcing fabrics, such as parachute fabrics, are provided with cores or warp ends to control the axial stretch. These axial control members are made by twisting or by fiber selection and prestretching to have an elongation equal to the elongation of the material to which the finished braid cord is to be attached. The braided cord is then constructed of selected yarns. When the braid and the cloth are sewn together under the same tautness, both will elongate to the same extent, and each will give the maximum strength which it possesses. TTD: 6-47

**Narrow fabric loom.** T. B. Wilkinson. Brit. P. 578 922. *Textile Mfr. 72,* 610 (Nov. 1946).

The jacquard mechanisms of a narrow fabric loom are simplified in construction and operation. Each jacquard mechanism, controlled by a set of master needles, incorporates a frame with 2 sets of griffes and hooks together with a compass board for positioning the harness and lingoes. TTD: 6-47

## Fabric processing IV 5

**Cloth inspecting machine.** Improved cloth inspecting machine. Anon. *Textile Recorder 64,* No. 765, 46, 48 (Dec. 1946).

The cloth is passed at constant speed over a table which can be adjusted to any angle. The table can be fitted with a glass panel, underneath which lighting equipment can be installed, which allows light filtration through the cloth as it passes over the glass panel.
TTD: 6-47

**Infrared drying.** Infrared heating for drying operations. F. A. Westbrook. *Textile Mfr. 72,* 589-90 (Nov. 1946).

Supplementing existing drying equipment with infrared lamps and radiant heat gas burners is described and illustrated with photographs of some typical installations. (*Cf.* TTD: 10-46, p. 459.) TTD: 6-47

**Wool carbonizing.** Carbonizing process for treating woolen rags. J. B. Speakman. *Fibres 8,* 6 (Jan. 1947).

The carbonizing process, in which rags are treated with HCl to destroy cotton and allow the wool to be recovered for reuse, can also be used for treating mixtures of viscose staple and wool, but is practically worthless in treating some of the war-developed textile blends. Cellulose acetate, for instance, is more resistant to HCl than either cotton or viscose rayon. Some of the newer synthetic fibers, such as nylon, are more valuable than wool, and an effort must be made to evolve a process which will allow the reuse of all the component fibers, except perhaps cotton and viscose rayon. This might

be achieved by using a series of solvents which would remove various rayons in succession. TTD: 6-47

**Web drier.** Bernard Offen. USP 2 421 283, May 27, 1947.

An arrangement of gas burners, ducts, fans and controls to dry printed web is provided. Electrical circuits and valves are provided to turn on more burners as the speed of the web is increased. Separate controls are provided to increase or decrease the amount of heat, independently of the speed of the web.
SPH TTD: 6-47

**Steaming knitted goods.** C. J. R. Ansett. Brit. P. 578 380. *Textile Mfr. 72,* 609 (Nov. 1946).

Lengths of knitted fabric are passed through a steam chamber on conveyors, the fabric being withdrawn at a relatively lower speed than it is fed into the chamber.
TTD: 6-47

**Tenter.** J. Dungler. Brit. P. 578 735. *Textile Mfr. 72,* 610 (Nov. 1946).

An improved tentering machine for drying cloth consists essentially of chain-guide rails with self-feeding clips and passages above and below the cloth, through which heated air is driven by a fan. TTD: 6-47

## Fabric applications IV 6

**Unwoven cotton.** Unwoven cotton web for plastic laminations. Anon. *Textile Age 10,* No. 11, 66, 70, 74, 76 (Nov. 1946).

Pilot plant manufacturing (at Hood Rubber Co.) of unspun, unwoven cotton webs impregnated with a resin is described and illustrated. In these web-base laminates, except in the case of 1/2" staple, flexural strength was found not significantly affected by either staple length or orientation variations.
JAW TTD: 6-47

**Bonded elastic fabric.** Dana E. Morrison & Paul F. Ziegler (to Kendall Co.). Re 22 880/USP 2 380 365, May 20, 1947.

This invention relates to a method of joining elastic fabrics, consisting of textile threads, knitted or woven together with rubber thread. The joint consists of bonding material, which is thermoplastic or thermosetting, on each side of the joint, and is covered with a non-stretching fabric, the whole being welded together by heat and pressure. The plastic material completely surrounds the textile and the rubber threads holding them in the correct relative positions.
SPH TTD: 6-47

**Shirt collar.** Richard O. Kennedy. USP 2 418 716, Apr. 8, 1947.





A collar with greater resistance to wear at the fold line is made with an outer ply of fine cotton yarn and an inner ply containing fusible materials or synthetic yarns which can be made cementitious. After the collar has been completed, the synthetic yarns are fused to unite the margin and body of the facing to produce a border which is stiffer than the body of the collar. TTD: 6-47

**Battery plate envelope.** Curtice C. White (to Electric Storage Battery Co.). USP 2 420 456, May 13, 1947.

A knitted or woven fabric of resin or glass filaments, constructed to fit loosely over the active elements of a storage battery. After the envelope is in place, it is shrunk by heat to fit the element tightly. The object is to prevent the active material of the battery from falling away from the base of the element.
SPH TTD: 6-47

**Felt impregnation.** Sylvania Industrial Corp. Brit. P. 578 156, 578 197. *Textile Mfr. 72,* 608 (Nov. 1946).

Felt is impregnated by applying a backing sheet of an organic thermoplastic film, melting the film under heat and pressure, and then removing the backing sheet. The film applied is of such thickness that the felt is impregnated but not filled so that after impregnation a certain degree of porosity remains. TTD: 6-47

**Resin impregnated fabric.** C. G. Wade & A. Amigo (to Plasticrete Holdings, Ltd.). Brit. P. 578 603. *Textile Mfr. 72,* 610 (Nov. 1946).

Linen, or similar fabric, or paper strips after impregnating with a thermosetting synthetic resin are formed into tubes on a mandrel, then sealed and bonded together.
TTD: 6-47

## CHEMICAL RAW MATERIALS V

**Positex.** New form of rubber latex application to fibers. Anon. *Fibres 8,* 5-6; *Textile Recorder 64,* No. 766, 50-1 (Jan. 1947).

A new form of rubber latex with reversed charge has many possible applications in textile processing. The rubber is deposited in discrete particles and not as a continuous film so that the rubber is present as a flexible binding ingredient holding individual fibers together. Positex treated fabrics have a soft, luxurious handle without loss of strength, Positex imparting to a soft twisted yarn the tensile strength normally associated with a hard twisted yarn. TTD: 6-47

**Plasticized zein composition.** Latimer D. Myers (to Emery Industries, Inc.). USP 2 420 381, May 13, 1947.

Zein is plasticized by means of a half ester of a di-

carboxylic acid containing 4-18 C atoms and a monohydric alcohol with 1-12 C atoms. This plasticizer does not decrease the water resistance, is compatible, and does not tend to bleed from the zein after curing.
TTD: 6-47

**Bonding fibers.** N. W. Knewstubb & C. A. Robb (to Bakelite, Ltd.). Brit. P. 578 562. *Textile Mfr. 72,* 609 (Nov. 1946).

Longitudinally arranged fibers are coated with a thermosetting resinous bonding agent and then heated under twist and tension to harden the resin and bond the fibers, thus forming solid rods. TTD: 6-47

## CHEMICAL PROCESSING VI

**Desizing.** Desizing. Batuklal C. Desai. *Indian Textile J. 57,* 139 (Nov. 1946).

Some of the methods of desizing cloth or yarn are briefly noted. Various types of enzymes (for fermenting the starches) used in India are mentioned. TTD: 6-47

**Finishing.** Commercial glyoxal clears new research paths. J. A. Field, Carbide & Carbon Chemicals Corp. *Chem. Industries 60,* 960-3 (June, 1947).

The chemical nature and uses of glyoxal are discussed. The textile industry uses it for shrinkproofing rayon, and also in miscellaneous finishing.
LCL TTD: 6-47

**Scouring.** New opportunities for Tritons. Anon. *Rohm & Haas Reptr. 5,* No. 2, 1-4, 16 (May, 1947).

Applications of modern synthetic detergents in wool processing are surveyed.
ELW TTD: 6-47

**Starch replacement.** Replacement of starch in textile finishing. Anon. *Fibre & Fabric 100,* No. 3237, 10 (Feb. 15, 1947).

From investigations of possible replacements for starch the following properties were considered to be important: available at reasonable cost, nonirritating to the skin, ready removability from fabric, odorless in finishing, and unimpaired dyeing. Two water-soluble styrene and alkyd resin compounds appeared to have these properties. TTD: 6-47

**Yarn package support.** Wm. A. Traver (to Franklin Process Co.). USP 2 418 740, Apr. 8, 1947.

An extension is provided at the upper end of the standpipe in the kier to support and to center the topmost packages of the series of yarn packages strung thereon. This extension is telescoped within the end of the standpipe when the packages are compressed by closing the cover of the kier. TTD: 6-47





**Twist-setting substance.** Kenneth R. Brown (to Am. Viscose Corp.). USP 2 418 752, Apr. 8, 1947.

Higher fatty acid esters of an ether condensation product of a polyhydric alcohol or carbohydrate containing at least 3 hydroxyl groups with an olefine oxide containing at least 3 C atoms are used to set the twist and to impart pliability, softness, and lubricity to yarns.
TTD: 6-47

**Sizing artificial yarns.** Herbert Freund. USP 2 418 927, Apr. 15, 1947.

Artificial yarns to be used in the production of knit goods are sized with a self-emulsifiable mixture of a hydrogenated oil, a solid fatty acid, and a soap with a melting point of 40-70°C and an iodine value not exceeding 30. TTD: 6-47

**Preboarding nylon stockings.** Alpheus O. Hurxthal (to Proctor & Schwartz, Inc.). USP 2 419 645, Apr. 29, 1947.

A type of preboarding machine to be used in the processing of nylon stockings is described, in which the forms are arranged in vertical planes radiating from a common vertical axis, which can be enclosed in a vertical movable dome. The dome is lowered over the forms and fits on a horizontal surface at the base of the machine, forming a pressure seal so that the stockings can be treated with steam under pressure. The forms are pivoted so that they can be swung outward to facilitate placing stockings on them and removing from them. Damage to stockings from contact with adjacent forms is prevented. TTD: 6-47

**Resin finishing.** Herbert J. West (to Am. Cyanamid Co.). USP 2 420 157, May 6, 1947.

Melamine formaldehyde condensation products will react with salts of tertiary nitrogen bases to form a new class of water-soluble quaternary ammonium salts of melamine formaldehyde condensation products which are especially suited for finishing textiles. They decompose at 80°C or above, and curable melamine formaldehyde condensation products are left behind. Textiles to be treated are impregnated with aqueous solutions or dispersions of these new condensation products and are then heated above 80°C. TTD: 6-47

**Treating hosiery.** Howard A. Young (to U. S. Rubber Co.). USP 2 421 363, May 27, 1947.

Rubber or water-insoluble synthetic resin is deposited directly on a fabric. The fabric is then rinsed in a dilute solution of a cation-active substance, such as a quaternary ammonium salt with an aliphatic straight chain containing 6 or more C atoms. This reduces the tack or drag of the deposited substance so that articles such as stockings can be easily pulled onto drying forms

without transferring particles of the deposit onto the forms or onto the operator's hands. TTD: 6-47

## COLOR VII

**Color perception.** Physiological foundations of one-color accent. Waldemar Schweisheimer. *Indian Textile J. 57,* 251-2 (Dec. 1946).

The choice of colors for clothes is emphasized as important to the buyer and seller of clothing material.
TTD: 6-47

**Dyeing and printing.** Progress in 1946. A. J. Hall. *Textile Recorder 64,* No. 765, 56, 59-60, 67, No. 766, 52-4 (Dec., 1946; Jan., 1947).

Some of the more outstanding developments in dyeing, printing, and finishing processes are briefly reviewed.
TTD: 6-47

## Bleaching VII 1

**Continuous bleaching.** Continuous bleaching of textiles described. Anon. *Fibre & Fabric 100,* No. 3242, 6-8 (Mar. 22, 1947).

A paper (by Thos. E. Bell, E. I. du Pont de Nemours & Co.) reviewing the basic operations and describing some typical installations, is briefly summarized. One system designed for handling goods in rope form and 2 systems designed for open-width processing are described. TTD: 6-47

## Dyeing VII 2

**Azo dyes.** Color of azo dyes in relation to chemical constitution. Robt. S. Mayston. *Textile J. Australia 21,* 715-22 (Dec. 1946).

The manner in which various groupings and structures which go to make up azo dyes contribute to give the final color to the dye is discussed, together with an explanation of the function of the auxochrome, as based on modern electronic theory.
ELW TTD: 6-47

**Dyeing and finishing.** Preparation, dyeing, and finishing of new fibers. C. C. Wilcock. *J. Soc. Dyers Colourists 63,* 41-5 (Feb. 1947).

Some recent trends in the preparation, dyeing, and finishing of rayons, nylon, and Vinyon, as well as casein fiber, Rayolanda, and alginate rayons, are briefly summarized.
SFS TTD: 6-47

**Glue in dyeing.** Glue in dyebath. V. D. Riswadkar. *Indian Textile J. 57,* 253-4 (Dec. 1946).

Because of its colloidal nature glue is considered the best retarding and leveling agent for dyeing cotton yarn, particularly with vat dyes, assuring slow absorption and as a result more even dyeing. TTD: 6-47

**Lace dyeing.** Dyeing and finishing lace materials. Anon. *Fibres 8,* 7-9 (Jan. 1947).

The design, color matching, and the various preparation, dyeing and finishing operations are detailed.
TTD: 6-47

**Resin-pigment dyeing.** New resin-pigment method of dyeing. F. A. Westbrook. *Textile Mfr. 72,* 601 (Nov. 1946).

A dyeing method (Dan River Mills) whereby a thin film binding the color to the fibers also acts as a finish, suitable for cotton, viscose, and acetate rayons, nylon, etc., is briefly mentioned. TTD: 6-47

**Predyeing treatment.** Walter G. Cameron & Thos. H. Morton (to Courtaulds, Ltd.). USP 2 418 696, Apr. 8, 1947.

The dyeing properties of cellulose and its derivatives are improved by treating with an aqueous solution containing an aliphatic aldehyde and a compound represented by the formula $NH_2$-C (NH)-NH-NYZ in which formula Y is the hydroxyethyl, biguanide ethyl, ethylamino, triethylene triamino radical, or a cyclic radical and Z is hydrogen, a hydroxyethyl radical or a cyclic radical. TTD: 6-47

**Vat dyeing.** Edw. Weber (to Allied Chemical & Dye Corp.). USP 2 420 729, May 20, 1947.

Full shades are produced on animal fibers by dyeing piece goods in rope form with an indigoid vat dye, the extent of the dyeing being insufficient to produce a full shade, and bringing the dye to full shade by dyeing with a wool color. The dyeing with the wool color may precede the dyeing with the indigoid vat dye.
TTD: 6-47

**Nylon dyeing.** Thos. Skeuse, Jr. (to Geigy Co., Inc.). USP 2 421 131, May 27, 1947.

Synthetic linear polyamide fibers, such as nylon, are dyed by first boiling in an acid bath containing a chrome color and then immersing in an acid bath containing about 0.5 vol.% of a chromium salt. The fiber is then steamed at a pressure of 8 lbs. or more above atmospheric pressure. Shades of unexcelled brightness are produced in this way. TTD: 6-47

DYEING OF TEXTILE FIBERS. R. S. Horsfall & L. G. Lawrie. Chapman & Hall, Ltd., London; edition 2; 1946; 448 pp.; price 25s.

Reviewed in *Chemistry & Industry 1947,* 390 (July 5).
TTD: 6-47

THEORY AND PRACTICE OF WOOL DYEING. C. L. Bird. Society of Dyers & Colorists, Bradford; 1947; 245 pp.; price 12s 6d.

Reviewed in *Chemistry & Industry 1947,* 374-5 (June 28). TTD: 6-47

## Printing VII 3

**Czech printing.** Czech screen printing equipment. Anon. *Textile Mfr. 72,* 592-4 (Nov. 1946).

A gauze tensioning table, a pasting-on machine, a washing machine, reeling apparatus for removing and drying printed fabric, and screen printing apparatus with electric doctor motion are the major pieces of equipment (manufactured by Zimmer) described and illustrated. TTD: 6-47

**Printing.** Acid steaming in textile printing. Technicus. *Textile Mfr. 72,* 595-6 (Nov. 1946).

In a brief survey, acid and neutral steaming (for fixing the dyes in printing) are briefly compared. TTD: 6-47

**Printing vegetable fibers.** Short survey of dyestuffs used in printing of vegetable fibers. L. L. White. *Textile J. Australia 21,* 640-4, 646 (Nov. 1946).

A brief general review.
ELW TTD: 6-47

**Textile printing.** Short history of textile printing. P. J. Wood, Royce Chemical Co. *Fibre & Fabric 100,* No. 3240, 6-8 (Mar. 8, 1947).

A brief historical survey notes the development of block, roller, and screen printing. TTD: 6-47

**Printing pile fabric.** Howard L. Shuttleworth, Garfield J. Underwood & Lewis R. Jones (to Mohawk Carpet Mills, Inc.). USP 2 419 694-5, Apr. 29, 1947.

A pattern is printed on a pile fabric by means of a cylindrical stencil sheet mounted on a rotary drum, the surface of which is perforated. The supply of coloring matter is maintained on the inner surface of this sheet, and the fabric is advanced horizontally so that the tips of the pile make light contact with the stencil, which rotates at the same speed. Coloring matter passes through the stencil sheet and is drawn into the fabric by suction applied to its under surface through a suction chamber mounted directly beneath the drum. Sharp, clear designs may be printed, the coloring matter permeating the pile so that crushing or distortion does not bring uncolored fabric into view. TTD: 6-47

**Textile decorating composition.** Edw. Armatys (to Interchemical Corp.). USP 2 421 000, May 27, 1947.





Very stable water-in-lacquer emulsions can be made by using, as the emulsifying film-former in the lacquer, the reaction product of formaldehyde with the addition product of an unsaturated fatty oil and an alpha olefinic dicarboxylic acid, such as maleic, fumaric, citraconic, and itaconic acids. The addition products alone give very unstable water-in-lacquer emulsions; the soaps, because of their water dispersibility, will not even produce such an emulsion; nevertheless, after reaction with formaldehyde, the addition product produces unusually stable emulsions of the water-in-lacquer type. TTD: 6-47

**Discharge printing.** Mathieson Alkali Works. Brit. P. 578 528. *Textile Mfr. 72,* 609 (Nov. 1946).

In a fabric printing process a paste containing $NaClO_2$ as the active chemical ingredient is applied to the fabric in the desired design to effect the discharge of the color onto the fabric. TTD: 6-47

## Measurement and defects VII 4

**Dye fastness.** Fastness of dyestuffs and dyed materials. Kemmek. *Textile Recorder 64,* No. 764, 52-3 (Nov. 1946).

Tests for fastness to milling, washing, chlorine solutions, acids, alkalis, and other properties are described. TTD: 6-47

**Dye identification.** 4-Chloro-2-aminophenol-5-and-6-sulfonic acids, their characterization and differentiation. J. F. Gaunt, F. M. Rowe & J. B. Speakman. *J. Soc. Dyers Colourists 63,* 48-50 (Feb. 1947).

Methods of identification for the 2 acids are given.
SFS TTD: 6-47

**Tippy dyeing of wool.** Tippy dyeing of wool and its control. Anon. *Fibre & Fabric 100,* No. 3233, 10 (Jan. 18, 1947); *Am. Wool Cotton Reptr. 60,* No. 52, 9-10 (Dec. 26, 1946).

From 4000 tests of dyeing properties on tippy wool and mohair with more than 650 acid and chrome dyes, a comprehensive table of the dyes tested was obtained, rating the dyes for their tendency toward tippiness. These tabulated ratings should be of value to the woolen industry. TTD: 6-47

**Wool dyeing.** Studies on wool dyeing: crocking. Henry E. Millson, Willard H. Watkins & Geo. L. Royer, Am. Cyanamid Co. *Am. Dyestuff Reptr. 36,* 45-63, 69-70 (Feb. 10, 1947); *Calco Tech. Bull.* No. 780 (Mar. 1947).

Microscopical studies of a series of dyed samples, both wet and dry, were carried on to determine the influence on crocking, or rubbing-off, of the methods of applica-

tion of the dyes, of the choice of dyes, and of the pretreatment of the fabric before dyeing. It was found that the dye which rubbed off was on the outer parts of the wool fiber and that the number of dye particles remaining on the surface appeared to vary with the individual dye and the method of application. Means of reducing crocking from some specific dyes are outlined. A color chart and 16 illustrations of time-temperature relationships using various dyes are given.
ELW TTD: 6-47

## PROOFING VIII

**Cotton deterioration.** Attack by termites, microörganisms, and fungus on cotton fibers. Narhari H. Shah, Bhalakia Mills Co., Ltd. *Indian Textile J. 57,* 241-50 (Dec. 1946).

The effectiveness of 16 finishing treatments applied to cotton fabrics was determined and is presented in 2 tables. In general, proofing treatments that protect against termite attack also give resistance to microörganisms. TTD: 6-47

**Flammability.** Flammability of textiles discussed by scientists. Anon. *Fibre & Fabric 100,* No. 3241, 6, 8 (Mar. 15, 1947).

Flameproofing treatments and testing textiles for fire resistance, discussed at a meeting of the AATCC, are briefly summarized. TTD: 6-47

**Flammable clothing.** Accidents from highly flammable clothing. Marjorie W. Sandholzer, Natl. Bur. of Standards. *J. Home Econ. 39,* 133-4 (Mar. 1947).

The relative flammability of various fibers is briefly discussed. It is noted that no inexpensive, permanent flameproofing treatment is available; certain proofing treatments which are water-soluble, necessitating renewal after each laundering, are suitable for fine fabrics. TTD: 6-47

**Waterproof cotton fabrics.** Waterproof cotton fabrics in war and peace. Anon. *Jute & Canvas Rev. 17,* No. 217, 15-16 (Oct. 1946); *Textile J. Australia 21,* 744, 748 (Jan. 1947).

War needs and the shortage of flax stimulated the use of cotton for waterproof fabrics where previously only linen canvas had been used. The relative merits of cotton and flax in watertight fabrics are briefly compared. TTD: 6-47

**Water-repellent fabrics.** Innovation in water-repellent fabrics. C. S. Jones. *Indian Textile J. 57,* 140-2 (Nov. 1946).

Ventile fabrics and their construction (an Oxford plain weave) are discussed particularly with reference to the specification controlling their manufacture issued by Shirley Institute. TTD: 6-47

**Wool shrinkage.** Anti-shrinkage treatment for wool. C. S. Jones. *Indian Textile J. 57,* 237-40 (Dec. 1946).

Wool felting tendencies are briefly considered, and the use of alginates in sizing materials is discussed. A new aluminum fiber (Reynolds Metals Co.) and 2 yarns made from it (Reymel and Reyspun) are briefly noted. TTD: 6-47

**Proofing fabrics.** Frederick F. Pollak. USP 2 418 525, Apr. 8, 1947.

Textiles are rendered nonflammable, water-resistant, and mildewproof by passing the material through an aqueous solution containing pyrophosphoric acid and through an aqueous melamine solution. The finely divided melamine pyrophosphate thus precipitated on the textile can be insolubilized on the fiber by heating at 120 to 140°C, or the material can be coated with a urea- or thiourea-formaldehyde condensation product and dried at 120 to 140°C. The pyrophosphoric acid has the property of swelling the fibers, especially cotton fibers, which increases the absorption of the amido compound. TTD: 6-47

**Fire-resistant coating.** Martin Leatherman. USP 2 418 843, Apr. 15, 1947.

A mixture of polyvinyl chloride, $ZnCO_3$, an opaque pigment, a plasticizer or softener, such as tricresyl phosphate, or triphenyl phosphate, and a solvent, such as acetone, ethanol, or butanol, is used to coat textile materials to produce a water-repellent but porous finish, or a rubber-like coating, impervious to air. TTD: 6-47

**Water-repellent paste.** Ernest P. Hartsfield & Jos. L. Richmond (to E. I. du Pont de Nemours & Co.). USP 2 419 399, Apr. 22, 1947.

Lower aliphatic alcohols were found to be suitable as diluents or solvents in the synthesis of water repellents of the quaternary-ammonium type, such as stearamidomethylpyridinium chloride. The product is in paste form, which facilitates its application to fabrics. Open-chain lower aliphatic or cyclic alcohols, which are liquid at ordinary temperatures, may be used. Up to 30% of the alcohol may be replaced by other organic solvents. TTD: 6-47

**Nonflammable waterproofed textiles.** Frederick F. Pollak. USP 2 421 218, May 27, 1947.

The insoluble compounds of the amido derivatives of cyanuric acid were found to be very effective for water-

proofing and flameproofing textiles. A compound containing 2 melamine molecules to one pyrophosphoric acid was found to be especially satisfactory. The textiles are first impregnated with the pyrophosphoric acid, which swells the fiber, and then passed through the melamine solution. An insoluble, fine, white precipitate is formed which adheres to the fibers. The product is then coated with a condensation product of melamine with formaldehyde, or a mixture of melamine and thiourea with formaldehyde. This improves the adherence and the resistance of the coating to alkalis and salts. The fabric is rendered completely nonflammable and remains so after soaking in water for a week. It is especially suitable for military clothing and for firemen's clothing.
TTD: 6-47

FIREPROOFING OF FABRICS. J. E. Ramsbottom. Report of Dept. of Scientific and Industrial Research, London. His Majesty's Stationery Office; 1947; 121 pp.; price 2s 6d. TTD: 6-47

## TESTING AND ANALYSIS IX

**Determining yarn diameters.** What is new in science and engineering? Everett S. Lee, *ASTM Bull.* No. 141, 24-32 (Aug. 1946); *Fibres 8,* 18 (Jan. 1947).

An instrument that electrically measures and records the diameter of yarn passing through it at a rate of 72 in./min. (developed by ASTM during the war) handles yarn sizes from 3 to 24 and is accurate to 0.010 ± 0.005". TTD: 6-47

**Electronic hygrometer.** Fielden electronic hygrometer. Anon. *Textile Weekly 39,* 1042-5 (June 27, 1947).

A new electric hygrometer (Fielden Electronics, Ltd.) has been used to measure and control moisture content on ball-warp and beam sizing or slashing frames, on cylinder drying machines, hot-air senters, damping and shrinking machines, textile printing and tentering machines, and on proofing and padding machines. The electrode system consists of 2 circular plates about 3" in diameter. The material to be tested is run between these 2 plates, and the dielectric constant is measured at radio frequencies. A meter in the circuit is calibrated to indicate directly moisture content from 0 to 20%.
EJB TTD: 6-47

**Moisture analysis.** Infrared direct reading moisture tester. R. Barrington Brock. *Chemistry & Industry 1947,* 299-302 (May 31).

Analysis of moisture in viscose fiber, cotton linters, and other materials, is obtained within 10 min. by infrared drying, giving direct readings.
LCL TTD: 6-47





**Single fiber properties.** Modern methods of fiber investigation. C. S. Whewell. *Nature 159,* 379 (Mar. 15, 1947).

Fiber properties being studied, such as breaking load, extension at break, deformation by shearing stresses, etc., are briefly noted. TTD: 6-47

**Single fiber testing.** Measurement of bending modulus of monofils. P. W. Carlene. *J. Textile Inst. 38,* T38-42 (Feb. 1947).

An apparatus for determining the bending modulus of monofils is described and illustrated. Young's modulus is determined by the principle of the deflection of a beam supported at the ends and loaded in the middle.
HAM TTD: 6-47

**Single fiber testing.** Surface tension method for measuring perimeters of fibers and contact angles of liquids against fibers. G. E. Collins. *J. Textile Inst. 38,* T73-7 (Feb. 1947).

A micro-method of determining the perimeters of fibers, swelling of fibers in water, and the contact angle of water against fibers is described.
HAM TTD: 6-47

**Single fiber testing.** Shear strength of filaments and fibers. D. Finlayson. *J. Textile Inst. 38,* T50-3 (Feb. 1947).

An apparatus, used with a pendulum type tester, for determining the shear strength of fibers is described. A table showing shear tenacity and other physical characteristics of the common textile materials is given.
HAM TTD: 6-47

**Single fiber testing.** Microbalance for weighing textile fibers. E. Lord. *J. Textile Inst. 38,* T84-93 (Feb. 1947).

A balance, considered superior to the usual torsion balances, for weighing single fibers is described in some detail and illustrated. By this method the fiber is suspended on a cantilever beam, and the weight of the fiber is indicated by the deflection of the beam.
HAM TTD: 6-47

**Single fiber testing.** Determination of tensile properties and torsional rigidity of fibers. Reginald Meredith. *J. Textile Inst. 38,* T15-19 (Feb. 1947).

Two pieces of apparatus are described, each using small quantities of fiber for testing: (1) a load-extension tester with recorder and (2) a torsional pendulum to measure rigidity.
HAM TTD: 6-47

**Single fiber testing.** Measurement of torsional relaxation in textile fibers. W. E. Morton & F. Permanyer. *J. Textile Inst. 38,* T54-9 (Feb. 1947).

A method of determining the rate of stress decay in textile fibers, by means of a test extending as long as 24 hrs., is presented.
HAM TTD: 6-47

**Single fiber testing.** Sampling problem in single fiber testing. R. C. Palmer & H. E. Daniels. *J. Textile Inst. 38,* T94-101 (Feb. 1947).

A mathematical discussion is presented of bias as affecting fiber sampling, where the characteristics of the bulk are to be determined from the characteristics of single fibers.
HAM TTD: 6-47

**Single fiber testing.** Measurement of the refractive indices of fibers. J. M. Preston. *J. Textile Inst. 38,* T78-83 (Feb. 1947).

Various methods available for determining the refractive indices of fibers (*e.g.* the methods of Becke, Schröder van der Kolk, and Fox and Finch) are critically discussed.
HAM TTD: 6-47

**Single fiber testing.** Axial swelling of rayons. J. M. Preston & S. Das Gupta. *J. Textile Inst. 38,* T60-4 (Feb. 1947).

The structure of rayon fibers may be determined from their axial swelling by means of a test method described, data for the various types of rayons being given.
HAM TTD: 6-47

**Single fiber testing.** Photographic recording extensometer. J. Sikorski, C. S. Whewell and H. J. Woods. *J. Textile Inst. 38,* T20-37 (Feb. 1947).

A recording extensometer is described and illustrated in some detail. It may be used to determine the following properties of fibers: load-elongation at constant rate of elongation, relaxation at constant elongation, load-elongation at constant rate of loading, elongation at constant load, and fiber friction.
HAM TTD: 6-47

**Single fiber testing.** Mechano-chemical methods for use with animal fibers. J. B. Speakman. *J. Textile Inst. 38,* T102-26 (Feb. 1947).

The uses to which determinations of load-extension curves, supercontraction, and permanent set can be put in the routine control of wool textile processes, as well as in research on the chemistry of animal fibers, on the basis of 3 (of the many) mechano-chemical methods available, are discussed. Each method can detect and, in certain cases, estimate salt linkage breakdown, modification and breakdown of cystine linkages, and cross-linkage formation between the main peptide chains of animal fibers. TTD: 6-47





**Single fiber testing.** Bending fracture of fibers. R. H. K. Thomson & David Traill. *J. Textile Inst. 38,* T43-9 (Feb. 1947).

An apparatus for determining the resistance of fibers to fracture when submitted to repeated bending, based on the original ideas of Franz and Henning but with modifications, is described and illustrated. Three photomicrographs of fractured fibers are shown.
HAM TTD: 6-47

**Single fiber testing.** Direct measurement of transverse swelling of wool fibers in water vapor. F. L. Warburton. *J. Textile Inst. 38,* T65-72 (Feb. 1947).

The radial swelling of wool fibers is measured by determining the resistance of a capillary having a wool fiber as a core. A curve given represents the radial swelling to a high degree of accuracy and is in good agreement with previous determinations by other methods. It is also shown that the resistance of a cored pipe can only be used to determine variations of the diameter of the core if the eccentricity is kept constant and reasonably well known and that the method is unsuitable for absolute determinations of diameters. TTD: 6-47

**Single fiber testing.** Equipment for single fiber testing. C. S. Whewell, L. G. Wilson, R. D. Preston, F. Happey & A. W. Porter. *J. Textile Inst. 38,* T127-30 (Feb. 1947).

Apparatus exhibited at the Conference on Modern Methods of Single Fiber Testing held in the University of Leeds is listed and 2 pieces of equipment briefly described: a stiffness tester for fibers and yarns and an x-ray microcamera. TTD: 6-47

**Testing hosiery.** Customers aren't guinea pigs! Anon. *Knitter 11,* No. 1, 26, 29 (Jan. 1947).

The methods used by the U. S. Testing Co. are described. Stockings are tested for fitting qualities, flexing resistance, snag resistance, bursting strength and resistance to abrasion of the toe and heel areas. An abrasion tester developed by this company moves the sample back and forth on a carriage while the abrasive material remains stationary. Tests for absorbent qualities, color fastness, aging, air permeability, odor, mildew resistance, seam slippage, moth resistance, shrinkage, warmth, water repellency, fire resistance, and for irritation to the skin are described. TTD: 6-47

**Testing laboratory.** Modern testing laboratory—V. Walter S. Sondhelm. *Textile Recorder 64,* No. 765, 49-52 (Dec. 1946).

Equipment for testing finished fabrics is discussed and includes instruments for determining color fastness, shrinkage during washing, resistance to abrasion, porosity, and others. TTD: 6-47

**Water-repellency test.** Tentative textile standard No. 7 and 8, 1947. Anon. *J. Textile Inst. 38,* S1-14 (Feb. 1947).

The results of tests carried out (by a Textile Inst. committee) in establishing a standard method of test using the Bundesmann test (the specifications for which are given) are presented in some detail. This method is similar to the American drop penetration test, except for the wiping of the sample.

HAM TTD: 6-47

## TEXTILE MILLS X

**Accidents.** Industrial accidents. N. G. Nevadhar. *Indian Textile J. 57,* 224-5 (Dec. 1946).

It is pointed out that all accidents are costly and immediate attention should be given to every kind, whether major or minor. TTD: 6-47

**Air conditioning.** Air conditioning in textile mills—III. E. Howlett. *Textile Mfr. 72,* 576-9 (Nov. 1946).

The Cyclone system of air conditioning, including dust extraction and ventilation, of card rooms particularly, but also of spinning rooms and weaving sheds, is described and illustrated. TTD: 6-47

**Belt drives.** Belt driving practice. Anon. *Textile Recorder 64,* No. 764, 55-6 (Nov. 1946).

In a discussion of various types of belt drives suggestions are given for proper maintenance in order to prevent power losses. TTD: 6-47

**Boiler efficiency.** Lancashire boiler plant efficiency. Chas. F. Wade. *Textile Recorder 64,* No. 765, 63-4, No. 766, 58, 61, 76 (Dec. 1946; Jan. 1947).

Some practical methods for obviating heat losses are briefly considered. TTD: 6-47

**Card-room cleaner.** Card-room cleaner. Anon. *Am. Wool Cotton Reptr. 60,* No. 48, 93-5 (Nov. 28, 1946); *Textile World 96,* No. 12, 125, 127, 204, 206 (Dec. 1946).

Cleaning the walls and ceilings of a card-room by use of a fan mounted on a standard electric monorail trolley and set to blow against the ceiling at a 45° angle, is briefly described by reference to an installation at Erwin Cotton Mills.

JAW TTD: 6-47

**Fluorescent lighting.** Fluorescent lighting in mule rooms. Anon. *Textile Mfr. 72,* 594 (Nov. 1946).

A typical installation is briefly noted and illustrated. TTD: 6-47





**Indian textile machinery.** Manufacturing of textile machinery in India. Anon. *Indian Textile J. 57,* 206-7 (Dec. 1946).

A brief survey, in an editorial, of the machinery industry in India. TTD: 6-47

**Materials handling.** Material handling featured by STA. Anon. *Cotton 110,* No. 12, 76-8 (Dec. 1946).

An address (by V. G. Brookshire, Engineering Sales Co.), briefly summarized, discusses types of equipment available, illustrated by centrifugal installations. TTD: 6-47

**Textile waste.** Value of waste. Anon. *Rohm & Haas Reptr. 5,* No. 3, 10-13 (July, 1947).

Waste recovery and utilization are very efficient in the meat packing industry; but also in the textile industry there are many useful applications found for clippings, threads, bobbin ends, and even the fuzz that collects around the machines. Some of the problems encountered in the waste products industry, such as removing the gasproof finish from 12,000,000 lbs. of cotton underwear, are briefly discussed. TTD: 6-47

**Time study.** Time study methods in theory and practice. S. R. Balasubramanian. *Indian Textile J. 57,* 232-4 (Dec. 1946).

A brief survey is accompanied by a sample analysis of carding, presented in 2 tables. TTD: 6-47

**Wool-washing effluent.** Frank Totney (to Industrial Development Corp of South Africa, Ltd.). USP 2 421 094, May 27, 1947.

The effluent is evaporated to produce a minimum content near 4-5% of wool grease which requires evaporation of about half the water present. The effluent is then heated in an autoclave to about 290 to 300°F at about 50 lbs. gage pressure and is then allowed to settle for a period of about 1-8 hrs. in the autoclave to separate the grease suint and muddy liquor from one another. The clear middle portion of the liquor in the autoclave is returned to the wool scouring process. The grease recovered by the process has a high quality and is of a grade usually described as neutral. A substantially high yield of wool grease is obtained. An apparatus for carrying out the process is described and illustrated. TTD: 6-47

**Woolen mill lighting.** Wool in a new light. Anon. *Textile Recorder 64,* No. 766, 65 (Jan. 1947).

A lighting arrangement (at Thornton Spinning Co.'s Try Mills) is briefly described. TTD: 6-47

**Machine safety guards.** H. H. Busfield & N. C. L. Peate. Brit. P. 578 595. *Textile Mfr. 72,* 609 (Nov. 1946).

A safety guard for a fulling or combined milling and scouring machine prevents the hand of an operator from being drawn between the nip rollers. TTD: 6-47

1948 INSTRUMENTS INDEX. Instruments Publishing Co., Pittsburgh, Penna.; 124 pp.

TTD: 6-47

## BASIC SCIENCES XI

**High polymers.** Thermodynamics of crystallization in high polymers. I. Paul J. Flory, Goodyear Tire & Rubber Co. *J. Chem. Physics 15,* 397-408 (June, 1947).

The influence of stretching on crystallization is treated by an extension of the statistical mechanical theory of rubber elasticity as it is applied to 3-dimensional network structures. The theory appears to be in satisfactory qualitative agreement with observations.

TTD: 6-47

**Naphthalene sulfonation.** Theoretical discussion of positional sulfonation of naphthalene. I—Naphthalene and its sulfonic acids. H. H. Hodgson & D. E. Hathway. *J. Soc. Dyers Colourists 63,* 46-8 (Feb. 1947).

An interpretation is given of the experimental data on the sulfonation of naphthalene based on modern resonance theory.

SFS TTD: 6-47

**Plastic flow.** Plastic flow, creep and stress relaxation. I. Plastic flow. Chas. Mack, Imperial Oil, Ltd. *J. Applied Physics 17,* 1086-92 (Dec. 1946).

Plastic substances are considered to be composed of units of flow with various yield values. It is shown that in this case the product of the strain rate and viscosity is equal to the sum of the differences between the applied stress and the yield values. This relationship can be applied to any plastic system free of elastic after-effect and expresses their mechanical properties in terms of a coefficient of viscosity which is independent of the stress applied. With the proper choice of the distribution of yield values any kind of relation between stress and strain rate can be established. This relationship is applied to plastic flow which is defined as a deformation mechanism having a curvilinear relationship between stress and rate of deformation and constant rate of deformation at constant stress. Equations are given for the coefficient of viscosity of such systems and for the relaxation of stress at constant deformation as a function of time. TTD: 6-47

**Plastic flow.** Plastic flow, creep and stress relaxation. II. Creep. Chas. Mack, Imperial Oil, Ltd. *J. Applied Physics 17,* 1093-1100 (Dec. 1946).





Creep is defined as a mechanism of deformation for systems having a curvilinear relationship between stress and strain rate and also between strain and time at constant stress, and is related to changes in the internal structure of a plastic. It produces an increase in strength through work-hardening. The general equation covering the deformation of a plastic, given in Part I, is applied to creep; and equations are derived which give the stress as a function of the strain rate and time (time-hardening) as a function of strain rate and strain (strain-hardening) and as a function of strain rate, strain and time. Expressions are given for the coefficients of viscosity of such systems. The relaxation of stress at constant strain is discussed, and it is shown that the stress relaxation depends on the history of the substance. The concept of creep is also applied to thixotropic systems. TTD: 6-47

**Plastic flow.** Plastic flow, creep and stress relaxation. III. Creep and elastic after-effect. Chas. Mack, Imperial Oil, Ltd. *J. Applied Physics 17,* 1101-7 (Dec. 1946).

A large number of substances show the phenomenon of elastic after-effect, and part of their deformation recovers on unloading as a function of time. This portion of the deformation at constant stress has a strain rate which decreases with time and is therefore comparable to creep. Expressions are given for the strain-time relationships of such systems, and the process of stress relaxation at constant strain is discussed. The equations given in connection with plastic flow, creep due to work-hardening, thixotropy, and creep in combinations with elastic after-effect are applied to data given in the literature; and it is shown that these equations suffice to describe the deformation and relaxation mechanisms of a variety of materials such as metals, clay soil, food products, acrylic acid polymeride, polyvinyl chloride, cellulose acetate, manila ropes, paper laminates, phenolic molding compounds, rubber, asphalt, and bituminous pavements. TTD: 6-47

**Properties of cellulose.** Properties of cellulose as applied in plastic materials. W. E. Gloor, Hercules Powder Co. *J. Chem. Education 24,* 215-21 (May, 1947).

The degree of esterification, degree of polymerization or chain length, colloidal properties and purity are regarded as critical in the study of cellulosic materials used in plastics. The influence of these factors has been illustrated by practical examples taken from studies involving the use of cellulose esters (the nitrate, acetate and acetate butyrate) and of the ether, ethyl cellulose, in hot-molding plastics. TTD: 6-47